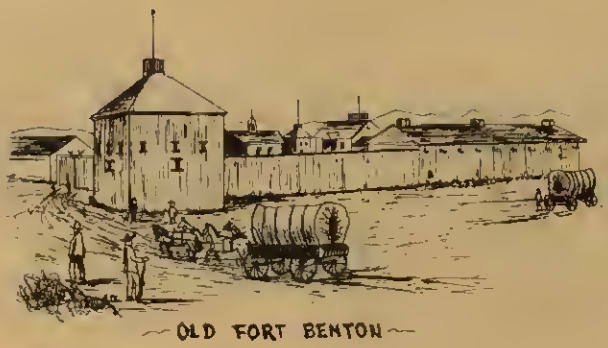
Water Resources Survey


OLD FORT BENTON

Part I:
HISTORY OF LAND AND WATER USE ON IRRIGATED AREAS

and

Part II:
MAPS SHOWING IRRIGATED AREAS IN COLORS DESIGNATING THE SOURCES OF SUPPLY

Chouteau County, Montana

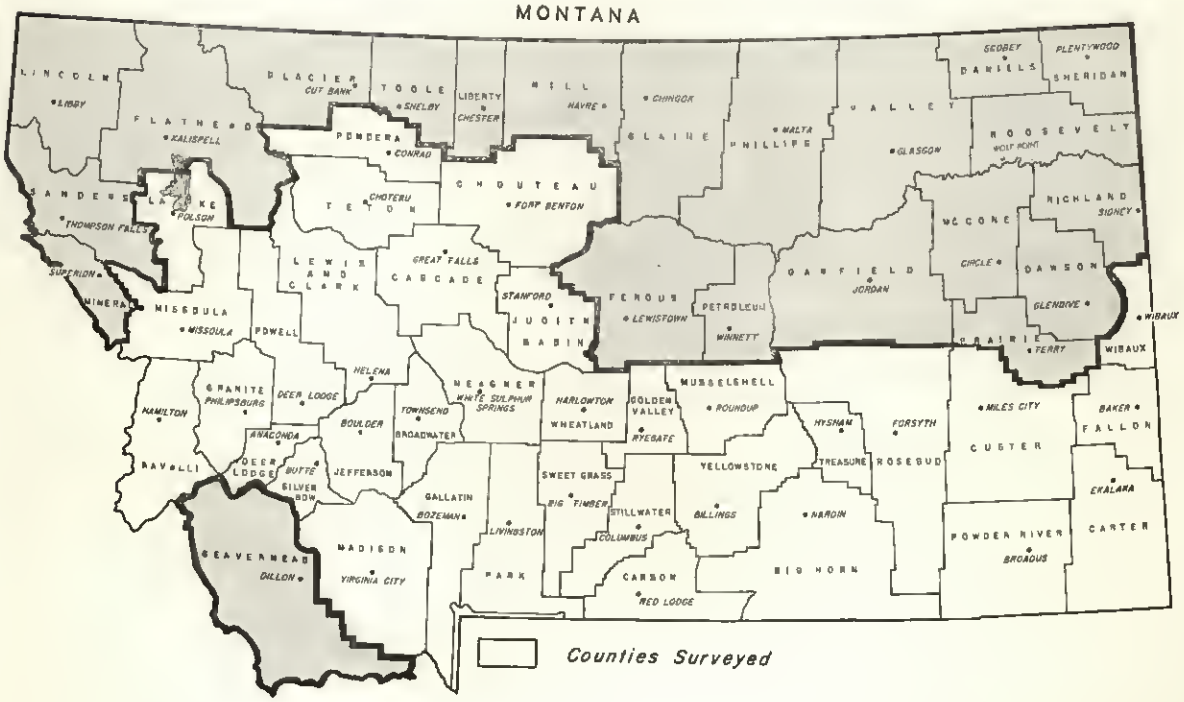
Published by
STATE ENGINEER'S OFFICE
Helena, Montana, June 1964

WATER RESOURCES SURVEY

CHOUTEAU COUNTY MONTANA

Part I

History of Land and Water Use
on Irrigated Areas



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STATE ENGINEER'S OFFICE
Helena, Montana
June, 1964

STATE ENGINEER'S OFFICE

Everett V. Darlinton.....State Engineer
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Water Resources Survey and Publication of County Reports

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Honorable Tim M. Babcock
Governor of Montana
Capitol Building
Helena, Montana

June, 1964

Dear Governor Babcock:

Submitted herewith is a consolidated report on the Water Resources Survey of Chouteau County, Montana.

This work was accomplished with funds made available to the State Engineer by the 38th Legislative Session, 1963, and in co-operation with the State Water Conservation Board and the Montana State Agricultural Experiment Station.

The report is divided into two parts: Part I consists of history of land and water use, irrigated lands, water rights, etc., and Part II contains the townships maps in the County showing in colors the lands irrigated from each source or canal system.

Work has been completed and reports are now available for the following counties: Big Horn, Broadwater, Carbon, Carter, Cascade, **Chouteau,** Custer, Deer Lodge, Fallon, Gallatin, Golden Valley, Granite, Jefferson, Judith Basin, Lake, Lewis and Clark, Madison, Meagher, Missoula, Musselshell, Park, Pondera, Powder River, Powell, Ravalli, Rosebud, Silver Bow, Stillwater, Sweet Grass, Teton, Treasure, Wibaux, Wheatland and Yellowstone.

The office files contain minute descriptions and details of each individual water right and land use, which are too voluminous to be included herein. These office files are available for inspection to those who are interested.

The historical data on water rights contained in this report can never become obsolete. If new information is added from time to time as new developments occur, the records can always be kept current and up-to-date.

Respectfully submitted,

EVERETT V. DARLINTON, State Engineer

ACKNOWLEDGMENTS

A survey and study of water resources involves many phases of both field and office work in order to gather the necessary data to make the information complete and comprehensive. Appreciation of the splendid cooperation of various agencies and individuals who gave their time and assistance in aiding us in gathering the data for the preparation of this report is hereby acknowledged.

COUNTY OFFICIALS

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FOREWORD

SURFACE WATER

Our concern over surface water rights in Montana is nearly a century old. When the first Territorial Legislature, meeting in Bannack, adopted the common law of England on January 11, 1865, the Territory's legal profession assumed that it had adopted the Doctrine of Riparian Rights. This doctrine had evolved in England and in eastern United States where the annual rainfall is generally more than twenty inches. It gave the owners of land bordering a stream the right to have that stream flow past their land undiminished in quantity and unaltered in quality and to use it for household and livestock purposes. The law restricted the use of water to riparian owners and forbade them to reduce appreciably the stream flow, but the early miners and ranchers in Montana favored the Doctrine of Prior Appropriation which permitted diversion and diminution of the streams. Consequently, the next day the legislature enacted another law which permitted diversion by both riparian and non-riparian owners. Whether or not this action provided Montana with one or two definitions of water rights was not settled until 1921 when the Montana Supreme Court in the Mettler vs. Ames Realty Co. case declared the Doctrine of Prior Appropriation to be the valid Montana water right law. "Our conclusion," it said, "is that the common law doctrine of riparian rights has never prevailed in Montana since the enactment of the Bannack Statutes in 1865 and that it is unsuited to the conditions here. . ."

The appropriation right which originated in California was used by the forty-niners to divert water from the streams to placer mine gold. They applied to the water the same rules that they applied to their mining claims—first in time, first in right and limitation of the right by beneficial use. Those who came to the Montana gulches brought with them these rules, applying them to agriculture as well as to mining.

The main points of consideration under the Doctrine of Prior Appropriation are:

1. The use of water may be acquired by both riparian and non-riparian landowners.
2. It allows diverson of water regardless of the reduction of the water supply in the stream.
3. The value of the right is determined by the priority of the appropriation; i.e., first in time is first in right.
4. The right is limited to the use of the water. Stream waters in Montana are the property of the State and the appropriator acquires only a right to their use. Moreover, this use must be beneficial.
5. A right to the use of water is considered property only in the sense that it can be bought or sold; its owner may not be deprived of it except by due process of law.

The State Legislature has provided methods for the acquisition, determination of priority and administration of the right. No right may be acquired on a stream without diversion of water and its application to a beneficial use. On unadjudicated streams, the Statutes stipulate that the diversion must be preceded by posting a notice at a point of intended diversion and by filing a copy of it within 20 days in the county clerk's office of the county in which the appropri-

ation is being made. Construction of the means of diversion must begin within 40 days of the posting and continue with reasonable diligence to completion. However, the Montana Supreme Court has ruled that an appropriator who fails to comply with the Statutes may still acquire a right merely by digging a ditch and putting the water to beneficial use.

To obtain a water right on an adjudicated stream, one must petition the District Court having jurisdiction over the stream for permission to make an appropriation. If the other appropriators do not object, the court gives its consent and issues a supplementary decree granting the right subject to the rights of the prior appropriators.

Inasmuch as the Montana laws do not require water users to file official records of the completion of their appropriations, it becomes advisable as soon as the demand for the waters of a stream becomes greater than its supply, to determine the rights and priorities of each user by means of an adjudication or water right suit. This action may be initiated by one or more of the appropriators who may make all the other claimants parties to the suit. Thereupon the Judge of the District Court examines the claims of all the claimants and issues a decree establishing priority of the right of each water user and the amount of water he is entitled to use. The court decree becomes in effect the deed of the appropriator to his water right.

Whenever scarcity of water in an adjudicated stream requires an allocation of the supply according to the priority of rights, the Judge, upon petition of the owners of at least 15 percent of the water rights affected, must appoint a water commissioner to distribute the water. Chapter No. 231, Montana Session Laws 1963, Senate Bill 55 amended Section 89-1001 R.C.M. 1947, to provide that a water commissioner be appointed to distribute decreed water rights by application of fifteen per cent (15%) of the owners of the water rights affected, or, under certain circumstances at the discretion of the judge of the district court — **"provided that when petitioners make proper showing they are not able to obtain the application of the owners of at least fifteen per cent (15%) of the water rights affected, and they are unable to obtain the water to which they are entitled, the judge of the district court having jurisdiction may, in his discretion, appoint a water commissioner."** After the Commissioner has been appointed the Judge gives him full instructions on how the water is to be apportioned and distributed in accordance with the terms of the decree.

The recording of appropriations in local courthouses provides an incomplete record of the water rights on unadjudicated streams. In fact, the county records often bear little relation to the existing situation. Since the law places no restriction on the number or extent of the filings which may be made on an unadjudicated stream, the total amount of water claimed is frequently many times the available flow. There are numerous examples of streams becoming over appropriated. Once, six appropriators each claimed all of the water in Lyman Creek near Bozeman. Before the adjudication of claims to the waters of Prickly Pear Creek, 68 parties claimed thirty times its average flow of about 50 cfs. Today, the Big Hole River with an average flow of about 1,000 cfs. has filings totaling 173,912 cfs. A person is unable to distinguish in the county courthouses the perfected rights from the unperfected ones since the law requires no official recordation of the completion of an appropriation. Recognition by the courts of unrecorded appropriations adds to the incompleteness of these records. To further complicate the situation, appropriators have used different names for the same stream in their filings. In Montana many

of the streams flow through several counties; consequently water right filings on these inter-county streams are found distributed in two or more county courthouses. Anyone desirous of determining appropriations on a certain river or creek finds it difficult and expensive to examine records in several places. In addition, the records are sometimes scattered because the original nine counties of 1865 have now increased to 56. As the original counties have been divided and subdivided, the water right filings have frequently not been transcribed from the records of one county to the other. Thus, a record of an early appropriation in what is at present Powell County may be found in the courthouse of the original Deer Lodge County.

It can be readily seen that this system of recording offers little protection to rights in the use of water until they are determined by an adjudication. In other words, an appropriator does not gain a clear title to his water right until after adjudication and then the title may not be clear because the Montana system of determining rights is also faulty. In the first place, adjudications are costly, sometimes very costly when they are prolonged for years. It is estimated that litigation over the Beaverhead River, which has lasted more than twenty years, has cost the residents of the valley nearly one-half million dollars. In the second place, unless the court seeks the advice of a competent irrigation engineer, the adjudication may be based upon inaccurate evidence. In the third place, if some claimant has been inadvertently left out of the action, the decree is not final and may be reopened for consideration by the aggrieved party. Another difficulty arises in determining the ownership of a water right when land under an adjudicated stream becomes subdivided in later years and the water not apportioned to the land by deed or otherwise. There is no provision made by law requiring the recording of specific water right ownership on deeds and abstracts.

The Legislative Session of 1957 passed Chapter 114 providing for the policing of water released from storage to be transmitted through a natural stream bed to the place of use. The owner of the storage must petition the court for the right to have the water policed from the storage reservoir to his place of use. If there are no objections, the court may issue the right and appoint a water commissioner to distribute the water in accordance therewith. This law applies only to unadjudicated streams.

Administration of water on an adjudicated stream is done by the District Court, but it has its drawbacks. The appointment of a water commissioner is often delayed until the shortage of water is acute and the court frequently finds it difficult to obtain a competent man for a position so temporary. The present administration of adjudicated streams which cross the county boundaries of judicial districts creates problems. Many of the water decrees stipulate head gates and measuring devices for proper water distribution, but in many instances the stipulation is not enforced, causing disagreement among the water users.

Since a water right is considered property and may be bought and sold, the nature of water requires certain limitations in its use. One of the major faults affecting a stream after an adjudication is the failure of the District Court to have some definite control over the transfer of water rights from their designated places of use. The sale and leasing of water is becoming a common practice on many adjudicated streams and has created serious complications. By changing the water use to a different location, many of the remaining rights along the stream are disrupted, resulting in a complete breakdown of the purpose intended by the adjudication. To correct this situation, legal action must be initiated by the injured parties as it is their responsibility and not the Court's.

At one time or another all of the other Western Reclamation States have used similar methods of local regulation of water rights. Now all of them except Montana have more or less abandoned these practices and replaced them by a system of centralized state control such as the one adopted by the State of Wyoming. The key characteristics of the Wyoming system are the registration of both the initiation and completion of an appropriation in the State Engineer's Office, the determination of rights and administration by a State Board of Control headed by the State Engineer. These methods give the Wyoming water users titles to the use of water as definite and defensible as those which they have to their land.

When Montana began to negotiate the Yellowstone River Compact with Wyoming and North Dakota in 1939, the need for some definite information concerning our water and its use became apparent. The Legislature in 1939 passed a bill (Ch. 185) authorizing the collection of data pertaining to our uses of water and it is under this authority that the Water Resources Survey is being carried on. The purpose of this survey is six fold: (1) to catalogue by counties, in the office of the State Engineer, all recorded, appropriated and decreed water rights including use rights as they are found; (2) to map the lands upon which the water is being used; (3) to provide the public with pertinent water right information on any stream, thereby assisting in any transaction where water is involved; (4) to help State and Federal agencies in pertinent matters; (5) to eliminate unnecessary court action in water right disputes; (6) and to have a complete inventory of our perfected water rights in case we need to defend these rights against the encroachments of lower states, or Wyoming or Canada.

GROUND WATER

Ground water and surface water are often intimately related. In fact, it is difficult in some cases to consider one without the other. In times of heavy precipitation and surface runoff, water seeps below the land surface to recharge underground reservoirs which, in turn, discharge ground water to streams and maintains their flow during dry periods. The amount of water stored underground is far greater than the amount of surface water in Montana, and without seepage from underground sources, it is probable that nearly all the streams in the state would cease to flow during dry periods.

It is believed that Montana's ground-water resources are vast and only partly developed. Yet this resource is now undergoing an accelerated development as the need for its use increases and economical energy for pumping becomes available. Continued rapid development without some regulation of its use would cause a depletion of ground water in areas where recharge is less than the withdrawal. Experience in other states has shown that once overuse of ground water in a specific area has started, it is nearly impossible to stop, and may result in painful economic readjustments for the inhabitants of the area concerned.

Practical steps aimed at conserving ground-water resources as well as correcting related deficiencies in surface water laws became necessary in Montana. Prior to the Legislative Session of 1961, there was no legal method of appropriating ground water. Proposed ground-water codes were introduced and rejected by four sessions of the Montana Legislative Assembly in 1951, 1953, 1955, and 1959.

In 1961, during the 37th Legislative Session, a bill was introduced and passed which created a Ground-Water Code in Montana. (Chapter 237, Revised Codes of Montana, 1961.) This bill became effective as a law on January 1, 1962, with the State Engineer of Montana designated as "Administrator" to carry out provisions of the Act.

Some of the important provisions contained in Montana's New Ground-Water Law are:

Section 1. DEFINITIONS OR REGULATIONS AS USED IN THE ACT.

(a) "Ground water" means any fresh water under the surface of the land including the water under the bed of any stream, lake, reservoir, or other body of surface water. Fresh water shall be deemed to be the water fit for domestic, livestock, or agricultural use. The Administrator, after a notice and hearing, is authorized to fix definite standards for determining fresh water in any controlled ground-water area or sub-area of the State.

(b) "Aquifer" means any underground geological structure or formation which is capable of yielding water or is capable of recharge.

(c) "Well" means any artificial opening or excavation in the ground, however made, by which ground water can be obtained or through which it flows under natural pressures or is artificially withdrawn.

(d) "Beneficial use" means any economically or socially justifiable withdrawal or utilization of water.

(e) "Person" means any natural person, association, partnership, corporation, municipality, irrigation district, the State of Montana, or any political sub-division or agency thereof, and the United States or any agency thereof.

(f) "Administrator" means the State Engineer of the State of Montana.

(g) "Ground-Water area" means an area which as nearly as known facts permit, may be designated so as to enclose a single and distinct body of ground water which shall be described horizontally by surface description in all cases and which may be limited vertically by describing known geological formations, should conditions dictate this to be desirable. For purpose of administration, large ground-water areas may be divided into convenient administrative units known as "sub-areas."

Section 2. RIGHT TO USE. Rights to surface water where the date of appropriation precedes January 1, 1962, shall take priority over all prior or subsequent ground water rights. The application of ground water to a beneficial use prior to January 1, 1962, is hereby recognized as a water right. Beneficial use shall be the extent and limit of the appropriative right. As to appropriations of ground water completed on and after January 1, 1962, any and all rights must be based upon the filing provisions hereinafter set forth, and as between all appropriators of surface or ground water on and after January 1, 1962, the first in time is first in right.

Any ground water put to beneficial use **after** January 1, 1962, **must** be filed upon in order to establish a water right thereto.

Montana's Ground Water Code originally provided for four different types of forms that could be filed.

Form No. 1. **"Notice of Appropriation of Ground Water"** — shall require answers to such questions as (1) the name and address of the appropriator; (2) the beneficial use for which the appropriation is made, including a description of the lands to be benefited if for irrigation; (3) the rate of use in gallons per minute of ground water claimed; (4) the annual period (inclusive dates) of intended use; (5) the probable or intended date of first beneficial use; (6) the prob-

able or intended date of commencement and completion of the well or wells; (7) the location, type, size, and depth of the well or wells contemplated; (8) the probable or estimated depth of the water table or artesian aquifer; (9) the name, address, and the license number of the driller engaged; and (10) such other similar information as may be useful in carrying out the policy of this Act. This form is optional, but it has an advantage in that after filing the Notice of Appropriation, a person has 90 days in which to commence actual excavation and diligently prosecute construction of the well. Otherwise, a failure to file the Notice of Appropriation deprives the appropriator of his right to relate the date of the appropriation back upon filing the Notice of Completion (Form No. 2).

Form No. 2. "**Notice of Completion of Ground Water by Means of Well**"—This form shall require answers to the same sort of questions as required by Form No. 1 (Notice of Appropriation of Ground Water), except that for the most part it shall inquire into accomplished facts concerning the well or means of withdrawal, including (a) information as to the static level of water in the casing or the shut-in pressure if the well flows naturally; (b) the capacity of the well in gallons per minute by pumping or natural flow; (c) the approximate drawdown or pumping level of the well; (d) the approximate surface elevation at the well head; (e) the casing record of the well; (f) the drilling log showing the character and thickness of all formations penetrated; (g) the depth to which the well is drilled; and similar information.

It shall be the responsibility of the driller of each well to fill out the Form No. 2 "Notice of Completion of Ground Water by Means of a Well," for the appropriator, and the latter shall be responsible for its filing.

Form No. 3. "**Notice of Completion of Ground-Water Appropriation Without a Well**"—is for the benefit of persons obtaining (or desiring to obtain) ground water without a well, such as by subirrigation or other natural processes so as to enable such persons to describe the means of using ground water; to estimate the amount of water used; and requiring such other information pertinent to this particular type of ground water use.

Form No. 4. "**Declaration of Vested Ground-Water Rights**"—is no longer valid. This form was used to file on ground water put to beneficial use **prior** to January 1, 1962, but the filing on such rights became invalid after a two-year period which ended December 31, 1963.

Failure to file Form No. 4 "Declaration of Vested Ground-Water Rights" within the two-year period did not cause a forfeiture of a claimant's vested ground-water rights although he might be called upon at some future time to prove his rights in court. A valid filing of Form No. 4, however, will be accepted by the courts as prima facie evidence of a ground-water right.

It shall be recognized that all persons who have filed a Water Well Log form as provided for under Section 1 and 2 of Chapter 58, Sessions Laws of Montana, 1957, shall be considered as having complied with the requirements of this Act.

It is important to note that the ground-water law states, "UNTIL A NOTICE OF COMPLETION (filing form) IS FILED WITH RESPECT TO **ANY** USE OF GROUND WATER INSTITUTED **AFTER** JANUARY 1, 1962, **NO** RIGHT TO THAT USE OF WATER SHALL BE RECOGNIZED."

Copies of the forms used in filing on ground water are available at the County Clerk and Recorder's office in each of Montana's 56 counties. It shall be the duty of the County Clerk in every instance to file the original copy for the county records; transmit the second copy to the Administrator (State Engineer); the third copy to the Montana Bureau of Mines and Geology; and the fourth copy to be retained by the appropriator (person making the filing).

Accurate records and the amount of water available for future use are essential in the administration and investigation of water resources. In areas where the water supply becomes critical, the ground-water law provides that the administrator may define the boundaries of the aquifer and employ inspectors to enforce rules and regulations regarding withdrawals for the purpose of safeguarding the water supply and the appropriators (see the wording of the law for establishing a "controlled area").

The filing of water right records in a central office under control of a responsible State agency, provides the only efficient means for the orderly development and preservation of our water supplies and it protects all of Montana's use—on both ground and surface waters.

METHOD OF SURVEY

Water Resources data contained in Part I and Part II of this report are obtained from courthouse records in conjunction with individual contacts with landowners. A survey of this type involves extensive detailed work in both the office and field to compile a comprehensive inventory of water rights as they apply to land and other uses.

The material of foremost importance used in conducting the survey is taken from the files of the county courthouse and the data required includes; landownership, water right records (decrees and appropriations), articles of incorporation of ditch companies and any other legal papers in regard to the distribution and use of water. Deed records of landownership are reviewed and abstracts are checked for water right information when available.

Aerial photography is used by the survey to assure accuracy in mapping the land areas of water use and all the other detailed information which appears on the final colored township maps in Part II. Section and township locations are determined by the photogrammetric system, based on government land office survey plats, plane-table surveys, county maps and by "on the spot" location during the field survey. Noted on the photographs are the locations of each irrigation system, with the irrigated and irrigable land areas defined. All the information compiled on the aerial photo is transferred and drawn onto a final base map by means of aerial projection. From the base map color separation maps are made and may include three to ten overlay separation plates, depending on the number of irrigation systems within the township.

Field forms are prepared for each landowner showing the name of the owner and operator, photo index number, a plat defining the ownership boundary, type of irrigation system, source of water supply and the total acreage irrigated and irrigable under each. All of the appropriated and decreed water rights that apply to each ownership are listed on the field forms with the description of intended place of use. During the field survey, all water rights listed on the field form are vertified with the landowner. Whenever any doubt or complication exists in the use of a water right, deed records of the land are checked to determine the absolute right and use.

So far as known, this is the first survey of its kind ever attempted in the United States. The value of the work has become well substantiated in the counties completed to date by giving Montana its first accurate and verified information concerning its water rights and their use. New development of land for irrigation purposes by State and Federal agencies is not within the scope of this report. The facts presented are as found at the time of completion of each survey and provide the items and figures from which a detailed analysis of water and land use can be made.

The historical data contained in these reports can never become obsolete. If new information is added from time to time as new developments occur, the records can always be kept current and up-to-date.

Complete data obtained from this survey cannot be included in this report as it would make the text too voluminous. However, if one should desire detailed information about any particular water right, lands irirgated, or the number and amount of water rights diverting from any particular stream, such information may be obtained by writing the State Engineer's Office in Helena.

Every effort is being made to produce accuracy of the data collected rather than to speed up the work which might invite errors.

HISTORY AND ORGANIZATION

The Indian tribes of the Blackfeet Nation were the original inhabitants of the area east of the Rocky Mountains and along the Marias River which later became Chouteau County. The Gros-Ventres and allied tribes controlled the area around the Bear Paw Mountains.

When the explorers Lewis and Clark left St. Louis, Missouri, in 1804, they traveled a route up the Missouri River on their journey to the Pacific, camping June 12, 1805, near the present town of Fort Benton. On their return trip in July 1806, Captain Lewis shot and killed a tribesman of the mighty Blackfoot Confederacy, when the would-be horse thief attempted to seize his gun. This event was to have bloody repercussions as the Blackfeet became implacable enemies of all early day travelers and settlers into this western frontier .

The first trading post, Fort McKenzie, was established in the area of Chouteau County by David D. Mitchell in March 1832, and was located a few miles above the mouth of the Marias River. It was named after Kenneth McKenzie, a member of the American Fur Company, who had established Fort Union a few years before, near the confluence of the Yellowstone with the Missouri River, and for a decade was one of the wealthiest on the Upper Missouri.

Federal law prohibited the sale of whiskey to the fndians, but profit-hungry traders disregarded the law generally. Kenneth McKenzie, eager for huge profits, purchased a still, took it up river on the steamer Yellowstone and was soon turning out raw whiskey which he traded to the fndians. A rival trader soon learned of tne still and reported it to the federal authorities. Censure of the American Fur Company for this act was so severe that McKenzie left Fort Union and the American Fur Company lost one of their most colorful employees. Often styled "King of the Upper Missouri", McKenzie was a virtual dictator of a fur trading empire stretching through Dakota into Montana.

In 1833, Alexander Culbertson succeeded David D. Mitchell in charge of Fort McKenzie, which at that time had about 25 employees.

The American Fur Company was reorganized in 1839 as the Pierre Chouteau Jr. and Company, although its public name continued to be the American Fur. Associated with Chouteau were Captain S. A. Lierce, John B. Larpy and Kenneth McKenzie.

In 1841, Alexander Culbertson was transferred against his wishes to a southern post and was succeeded by F. A. Chardon at Fort McKenzie. According to Lt. James H. Bradley, pioneer historian of Fort Benton, in January 1842, a war party of Blackfeet killed a pig belonging to the Fort. Pursued by Chardon, the Indians ambushed the whites, killing Reese, a negro. Chardon and an employee, Alexander Harvey, secretly prepared for revenge. They loaded a cannon at the main gate with a bucket full of lead balls, firing the gun into a large band of Blackfeet approaching the Fort for a peaceful trade. Twenty-one Indians were killed by the discharge and nine more who had been wounded were killed. That night the whites involved in the massacre danced a regular Indian scalp dance, waving the scalps of their victims.

The Blackfeet, naturally, were enraged and in secrecy Chardon had built a new post at the mouth of the Judith River against reprisals by the Indians. When the Missouri ice broke up the whites hastily moved to the new post called Fort Chardon. After the whites moved out, Fort

McKenzie went up in flames, being set afire by the enraged Indians. Voyagers afterwards called it Fort Brule or Burnt Fort. When the American Fur Company received the news that their richest outpost had been destroyed, Alexander Culbertson was recalled to restore good relations with the Indians. Temporary Fort Chardon was abandoned and Culbertson established Fort Lewis in 1843, about three miles above Fort Benton on the other side of the Missouri River. Three years later, at the request of the Indians, the logs of Fort Lewis were rafted down the river to the Fort Benton site, where no crossing of the river was involved and wood and game more plentiful. By 1850, part of the Fort Benton buildings had been reconstructed of adobe and Christmas night of that year, the name was officially changed to Fort Benton. Besides Alexander Culbertson, other men in charge of Fort Benton were Malcolm Clark and in his absence Andrew Dawson, and in the final year of operation in 1864-65, I. G. Baker.

The Chippewa was the first steamboat to get much beyond the mouth of the Milk River, arriving at Brule bottom from St. Louis on July 20, 1859, about 8 miles below Fort Benton, where Fort McKenzie had stood 25 years before. Charles P. Chouteau, of the American Fur Company was on board the Chippewa and John LaBarge was captain of the boat. The next year, 1860, the Chippewa and Key West arrived at Fort Benton on July 2nd to establish this town as the head of navigation on the Missouri River.

The era of the mountain steamboats in the Fort Benton trade was divided roughly into 3 categories. First there was the gold rush period, when any boat which could drag itself up to the local levee was assured a tremendous profit. Then there was the period of the Coulson Combine which developed boats that made a stable business of the river trade. Lastly, the period when the Power's and Baker's companies took over and ran boats in high or low water and were masters of the Upper Missouri and the overland freight routes, but lost their commercial supremacy when the railroads came. Fort Benton as head of navigation on the Missouri River, had as its chief items of trade: gold, buffalo robes, high grade ore, wolf hides, Indian blankets, guns and whiskey. Its merchants traded south to Alder Gulch and the Grasshopper Diggings; north to Great Slave Lake, Qu-Appelle, Fort Whoop-Up and Calgary; west to Piegan, Old Agency and Sun River; southwest to Two Dot, Ubet and Musselshell.

At one time in the early eighties, river traffic controlled by the Fort Benton merchants was almost exactly equal to the freight brought into Montana's eastern and western areas by the railroads. Its freight outfits churned up dust on a hundred trails that later became highways and routes from Fort Benton and bore such names as the Whoop-Up Trail, Mullan Military Road, Fisk Overland Route and the Cow Island Trail.

The most notable and historical route was the Mullan Military Road. Captain John Mullan was designated to make the first survey and open a wagon road from Fort Benton to Fort Walla Walla, Washington. The trail he built proved to be the forerunner of hundreds of miles of modern highway. It was meant to connect the heads of navigation on the Missouri and Columbia Rivers and to provide a means of quick access for troops to either side of the Rocky Mountains.

Ironically, the road was used by soldiers on only one occasion, but it was of great importance to immigrants, as thousands traveled through the mountains by that route. It was estimated that more than twenty thousand Oregon-bound immigrants used the Mullan Trail. It

took Mullan 8 years to complete the road, with Indian wars, congressional delays and doubts hindering him much more than the physical difficulties of building a road 624 miles in length through a trackless wilderness.

Another pioneer route into Fort Benton was the Fisk Overland Trail which originated from St. Cloud, Minnesota. Captain James L. Fisk was chosen to map out the route to Montana and guard the immigrants along the way. The first expedition in 1862 made good time, reaching Fort Union August 9th and averaging 16 miles a day for the 467 miles to that point. His escort-group contained 50 men of the frontier accompanying a party of 117 men and 13 women. The party reached Fort Benton September 5th and from there many of the members scattered to the Prickly Pear and Deer Lodge valleys. Only a hand full of men from the escort remained to accompany him to Fort Walla Walla over the Mullan Trail where the expedition was completely disbanded and Fisk returned to the east by boat. Included in this first expedition were N. P. Langford and James Fergus, both prominent figures in early-day Montana history.

Fort Whoop-Up, located in Canada at the end of the famous Whoop-Up Trail was used by Indian traders and whiskey runners in the late sixties and seventies to trade with the Canadian Indians. The trail ran almost due west out of Fort Benton, across the Teton River and thence across the plains to Pen d'Oreille Springs, passing near the present town of Conrad, then almost due north to the junction of St. Mary's and Belly rivers in Canada where Fort Whoop-Up was located. While unoccupied, Fort Hamilton, the original Fort, was burned in 1871 by Indians and rebuilt the same year. It soon had a new name. John Power, brother of T. C. Power, on one occasion asked a visiting Canadian trader, John LaMotte, how things were going up north. "Oh! they're whooping it up," was the answer. From this remark "Fort Whoop-Up" became the new name.

In the latter part of the navigation season, especially in the eighties, steam boats were unable to get over the bars and shoals between Cow Island and Fort Benton with full loads. Consequently, the boats lightened their cargo which was freighted overland to Fort Benton. The Cow Island Trail began at Cow Island on the Missouri River and followed a few miles up the Judith River, then overland to Fort Benton. This was strictly a local trail and had only one function—to deliver goods unloaded from steamboats at Cow Island for Fort Benton.

In the early 60's the harvest of buffalo robes had begun to diminish and business in the fur trading became more competitive as rival companies cut in on the dwindling returns. LaBarge and Harkness, Carroll and Steel, Durfee and Peck, I. G. Baker and Company, and during the last of the decade, T. C. Power and Brother, W. S. Wetzel and Kleinschmidt and Company were among those competing in the Indian trade. Apparently, however, it was only a matter of a few years until the lessening fur trade would drive nearly all of these companies out of the business. Seeing the end, the American Fur Company quit their Benton post in 1865.

Then came the gold stampede, as the word of finding gold in the Montana Territory spread eastward and Fort Benton's business again began to boom. In 1867, forty boats made the trip to Fort Benton; 1868, thirty-six and 1869, forty-two. Declining placer mines and a low water year in the Missouri River held the number of boats to eight in 1870, as the gold rush days drew to an end. During the period from 1865 to 1869 more than 150 boats had docked, bringing an estimated 10,000 miners to Fort Benton, and carrying hundreds more down the river, bearing tons of gold dust, thousands of tons of freight at 10c to 15c per pound. Deck passage on the boats

cost $150 to $200, with cabin accommodations more. The boats of the gold rush usually made only one trip a year, the long voyages from St. Louis and relatively deep draft of the boats making a second trip an impossibility except in the more favorable high water years.

In 1870 and 1871, the river trade dropped to a low point as the mining business lessened and there was little else in the way of commerce to justify boat travel.

The Coulson-Packett Company was formed in 1872 — the beginning of one of the most famous steamer lines on the Upper Missouri. The Coulson Brothers, Durfee and Peck, Grant and Marsh and others joined the combine which monopolized the river trade. Where before independent boats had come in hundreds to the call of the golden dollars of the gold rush, the Coulson-Packett Company now controlled the river traffic. With an increasing immigrant population and their great demand for supplies, the merchants and freighters of Fort Benton were establishing a stable river business for themselves.

T. C. Power with I. G. Baker bought the steamer Benton in 1875 which was the first boat to carry his trade mark the "Block P". In 1877, Baker came out with the Red Cloud. Meanwhile, Peck had split with the Coulsons and established the Peck Line which included the boats Nellie Peck, Peninah, E. H. Durfee, C. K. Peck and Fontenelle.

In the late seventies and early eighties there came herds of long horned cattle from the Panhandle and Staked Plains of Texas, along the Chisholm Trail to settle on Montana's ranges, which included the Chouteau County area. By the fall of 1886, more than a million head of cattle were on the ranges of the Montana Territory.

The day of the cattle boom and open range in Montana ended in the fall and winter of 1886-87. All the ranges in the Territory were overstocked in the fall of '86 due to a series of favorable winters. That year winter set in early and heavy snows made foraging difficult. The cattle, being in poor condition, were not ready for the terrible blizzard that struck early in February 1887. An early chinook melted the snow and when it froze a hard crust was formed so that the cattle could not break through it for forage. Driving blizzards that followed put them on the drift before the fury of the Montana blasts. When spring chinooks finally cleared the snow and owners tried to check their losses, the prairies and draws were littered with carcasses of frozen starved cattle. Losses ran from fifty to eighty percent. The Montana stockmen suffered losses of more than twenty million dollars. The Homesteaders rush of 1909-1915 has been accused of ending the day of open range in Montana, but actually the day of the big free cattle range outfits ended during the severe winter of 1886-1887.

Some of the earlier settlers in the county were John Harris on Highwood Creek in 1873, coming in from the Deer Lodge valley. Joseph Cobell, a native of Italy came to Fort Benton as an employee of the American Fur Company in 1846, and in 1874 took up the first residence on Shonkin Creek. In 1897, there were 5 established settlers in the area from Pondera Coulee to the forks of the three rivers, the Marias, Teton and Missouri. They were the homes of Homer Shepard, Harry Gould (Rattlesnake Harry) on Skit Creek; and east of Goosebill, Paul Grenon, Luke Vandetter and Powell Smith.

The beginning of the large influx of settlers in Chouteau County began early in 1900. Settlers poured into the Carter area of the county in October 1909. Ten thousand filings on two million acres of land were made in the Great Falls land office in 1910, and by April 1912, several hundred steam power outfits were turning the virgin soil in Cascade, Chouteau, Teton and Fer-

gus counties. A period of great prosperity prevailed over most of Montana following the settlement of the state by homesteaders, and Chouteau County seemed particularly favored. With little effort on the part of the farmers, wonderful crops of small grains were grown in the years before and after World War I. Chouteau County's economy today is based primarily on agriculture and wheat production has been the largest of any county in the state for more than one-third century. Besides wheat other grains grown are barley, oats and certified alfalfa seed. Many of the farms are becoming diversified and include some livestock. Most of the livestock raised are white faced range cattle, which number between 40 and 50 thousand head yearly, adding to the agricultural wealth of the county. (For further information see "Crops and Livestock" of this report.)

The locomotives of the Manitoba (Great Northern Railway) followed the newly laid tracks of Jim Hill's road in 1887, and ended the Missouri River traffic to Fort Benton, when they reached the city in October of that year. The Rosebud was the last of the early-day boats to dock at Benton, arriving there June 21, 1889. The Havre-Butte branch of the Great Northern Railway was completed through Fort Benton in 1887. A branch line of the Chicago, Milwaukee, St. Paul & Pacific Railroad between Lewistown and Great Falls was constructed through the southern part of Chouteau County in 1912.

Chouteau County was created by the Montana Territorial Legislature at Bannack on February 2, 1865, and named after Pierre Chouteau, a prominent member of the American Fur Company. The county is located in the north central part of Montana, just east of the Rocky Mountains. It contains an area of approximately 3,942 square miles, with extreme distances of 87 miles from east to west and 60 miles from north to south. At one time it was the largest county in the Montana Territory and second largest in the United States. It included parts of 10 other counties which were later formed in the state. The Missouri River flows through the central part of the county from west to east. Some of the important topographic features of the county are characteristic of the northwestern plains wheat regions, with broad rolling benches and broken divides sloping in the direction of the Missouri River. Other features of topography are: the Bear Paw Mountains in the extreme northeastern part; the Highwood Mountains in the southern part; the Goosebill Dome and Sandstone Capped Buttes called the Knees in the northwestern part; and the Shonkin Sag and other pre-glacial valleys in the central part.

Fort Benton, the largest town and county seat was known at various times as "The Birth Place of Montana," "Head of Navigation," "Chicago of the Plains" and has a population of 2,000. The Grand Union Hotel, built in 1884, is one of the main hotels operating in Fort Benton today. Other incorporated towns are Big Sandy with 1,000 population and Geraldine 500. Smaller unincorporated communities in the county are Highwood, Loma and Carter.

Transportation facilities in the county include a branch line of the Great Northern Railway which passes through the central part from Great Falls to Havre. U. S. Highway No. 87 from Great Falls passes through Fort Benton and two secondary State roads; 230 from Stanford in Judith Basin County to Fort Benton, and 223 from Fort Benton to Chester in Liberty County are main highway routes. Several hundred miles of county graded roads, mostly dirt, connect with the out-lying rural areas. A local municipal airport for the use of privately owned planes is located at Fort Benton and is used to a great extent by a number of flying farmers. Bus and truck companies provide additional travel and freight facilities to residents of the County.

The latest census figures show Chouteau County with a population of 7,900.

CLIMATE

Located astride the Missouri River in North-Central Montana, Chouteau is one of Montana's larger counties. While not quite as mountainous as some parts of Montana, the southeast quarter has quite rugged topography—particularly around and east of the Highwood Mountains. Elevations range from Highwood Peaks 7,678 ft. to less than 2,300 ft. where the Missouri River leaves the area flowing eastward toward Ft. Peck Reservoir. The natural drainage system of the area is exceedingly complex—streams (many dry much of most years) may be found flowing in almost any direction, and there is no general slope, as such, for the county as a whole. Principal drainages (in addition to the Missouri main stem which flows northeastward to Virgelle, then southeastward) are the Teton (flowing east) and Marias (flowing south) Rivers which join the Missouri at Loma. Other drainages of importance include Arrow (along the south-east border), and Highwood (northwestward from the Highwood Mountains to the Missouri) Creeks, but there are many others which carry important amounts of water during wet spells spring and summer.

Topographic effects of this complex system of valleys, coulees, ridges, and buttes, upon county climate are large; those effects account for most of the differences in climate known to exist within county boundaries. The climate in general is classifiable as "continental", but there are exceptions in most climate generalizations and Chouteau County is no exception. Although winters are mostly cold and dry, and summers warm and relatively wet, winter cold is often interrupted for days at a time by the foehn (locally "chinook") winds which are common in much of Central Montana most winters. Although these "chinook" winds originate along the Continental Divide some 60-70 miles west of the western boundary, they are almost as frequent and almost as strong over most of Chouteau County as they are to the west. It should be noted that in general the "chinook" condition lasts longer and is more frequent in the southwest half of the county than in the valleys along and north of the Missouri itself, where occasionally a "chinook" will succeed in displacing cold air for only a short time.

While the "chinooks" are an important winter weather feature, the Arctic cold invasions which usually visit the area several times each winter, accompanied by snow and strong northerly winds, comprise a weather type which residents of the county know they must be prepared for. These cold spells usually last only a few days at a time, but can produce minimums for the season in most years in the -20° to -40° range. The coldest of record within the county was -52° at Big Sandy in February, 1936. The county's wide variations in topography described above, and varying effects of "chinooks" from southwest to northeast, help account for most of the variation in annual average temperature from place to place (ranging from 42.7° at Lonesome Lake to 46.0° at Ft. Benton). But, as the table shows, elevation plays an important role in cooler summer temperatures at such places as Shonkin 7 S (el. 4,300 ft.) and Brady Aznoe (3,329 ft.).

Summers are warm, afternoon maximums in July averaging from 80° to 85°, depending upon location. The warmer summer areas, year in and year out, are the lower elevations in the eastern part of the county along the Missouri. Temperatures over the years have reached 110° or a little warmer on rare occasions; most summers produce highs close to the 100° mark. While hot weather does occur, particularly in lower parts of the county, it seldom lasts more than a couple of days; and the warmest weather usually occurs during periods of low relative hu-

midity. Really oppressive heat-humidity combinations are rare, but an occasional summer afternoon along the lower reaches of the Missouri can feel really hot during periods of low wind movement. During the hottest months, nighttime lows usually cool to the low 60's or high 50's.

The freeze-free season varies considerably with location, again in relation to topography. The period between 32° occurences averages 127 days (May 19-Sept. 23) at Ft. Benton, 116 days (May 22-Sept. 16) at Big Sandy, and 132 days (May 18-Sept. 25) at Geraldine; but even larger variations should be expected between other points, depending again on location. Flat or valley bottom sites, other things being equal, should have shorter seasons than those on hillsides or plateaus above the valleys.

As one might anticipate, the precipitation pattern is one of large variations, again resulting in large part from topography. There are more precipitation stations (10) in Chouteau than in most counties, and the tabulation at the end of this climate section reveals a very wide range (from 10.20 inches at Brady Aznoe to 25.90 at Shonkin 7 S) in annual averages. While it is doubtful that any part of the county has an average of less than 10 inches a year, it is likely that some slopes of the Highwood Mountains may receive as much as 30 to 40 inches. A very favorable aspect of the precipitation pattern (as far as agriculture is concerned) is the fact that 70-80 per cent of the annual average normally falls during the so-called April 1-September 30 growing season. Snowfall averages 30 to 50 inches a year, but is undoubtedly heavier along the slopes of the Highwood Mountains.

Stormy weather of several kinds is observed on occasion within county borders. In decreasing order of economic importance these storm types appear to be hail and thunderstorms, high winds (including an occasional winter blizzard), and heavy rains. Tornadoes have been so infrequent and so minor as to be classed as "rare". Very few summers pass without some hail damage to crops in limited small areas, but even in the worst hail years most of the area escapes serious losses. High winds, most often resulting from well-developed "chinook" conditions, sometimes reach gust speeds close to 100 m.p.h. in the more exposed locations, causing the usual types of damage (soil blowing, downed telephone and power lines, broken windows, loosened shingles, etc.), but winds of this magnitude occur over limited areas and only once every five years or so. Rains heavy enough to cause flooding have occurred with a frequency of one year in about 15, but rarely if ever, are they extensive enough to involve the whole county at one time.

Condensed temperature and precipitation data for Chouteau County weather stations appear in the following table:

TEMPERATURE

Station	Highest of Record	Lowest of Record	January Average	July Average	Annual Average
Big Sandy (1922-62)	111	-52	16.2*	71.3*	44.1*
Brady (Aznoe) (1951-62)	110	-45	19.7	66.3	43.2
Ft. Benton (1938-62)	109	-46	20.8	70.2	46.0
Geraldine (1951-62)	108	-41	21.7	68.1	45.0
Loma (1950-62)	110	-49	14.7	70.3	-----
Lonesome Lake (1948-62)	110	-51	12.8	67.5	42.7
Shonkin 7 S (1953-62)	104	-32	23.5	64.7	43.6

*1931-60

PRECIPITATION

Station	Yearly Average	Growing Season Average	Per Cent Falling in Growing Season	Wettest Year	Driest Year
Big Sandy (1922-62)	12.06	9.24	77	19.39 (1932)	5.94 (1949)
Brady (Aznoe) (1951-62)	10.20	8.46	83	15.33 (1953)	6.56 (1952)
Ft. Benton (1931-62)	14.29	9.95	70	22.57 (1951)	7.89 (1952)
Geraldine (1951-62)	16.30	11.60	71	21.09 (1954)	9.39 (1952)
Highwood (1951-62)	15.11	10.96	73	19.57 (1962)	10.24 (1960)
Highwood 7 NE (1947-62)	14.93	11.42	76	21.76 (1953)	8.14 (1952)
Iliad (1940-62)	11.30	8.16	72	15.41 (1962)	5.47 (1952)
Loma (1950-62)	11.51	8.66	75	15.71 (1951)	5.64 (1952)
Lonesome Lake (1948-62)	10.98	8.18	74	15.18 (1954)	5.47 (1949)
Shonkin 7 S (1953-62)	25.90	17.88	69	33.07 (1962)	14.11 (1956)

SOILS

The rock formations beneath the county are the source of the parent material for the soils. The physiography, drainage and glacial history of the area determined how these parent materials were deposited over the county and in this way directly influenced the composition and properties of the present soils. The depth, density, porosity, texture, and reaction are directly related within limits, to the parent material.

Most of the county except the Highwoods and Bear Paw Mountains is covered by material which was transported by glaciers and deposited as "till". This glacial "till" is the parent material which is altered by the climate and living organisms (including man's activity) over a period of time as modified by relief, and produces the soil we see today.

In some areas the "till" has been eroded leaving the underlying rock exposed at the surface; while in other areas the rock has had time to weather and shallow soils have developed. The chemical and physical properties of these young shallow soils are nearly the same as the properties of the materials from which they are formed.

The rock types that make up the parent materials for the soils are dominated by sedimentary rocks—shale, with some sandstone and limestone and locally igneous rocks from the Bear Paw and Highwood Mountains. Many of the soils in the county are fine textured (clayey), reflecting the influence of shale in the parent material.

The Great Soil Groups most widely represented in Chouteau County are: Alluvial, Brown, Chestnut, Grumosol and Solodized-Solonetz with some Rough Broken Lands along the Missouri River.

Alluvial soils are young soils that occur along streams and may be flooded periodically. The only development that has occurred in these soils is the darkening of the surface by the accumulation of organic matter. The material below the surface is essentially the same as it was at the time of deposition.

The Brown and Chestnut soils are those of the uplands. They have developed, in addition to a dark surface, a clayey prismatic subsoil. A zone of lime accumulation is usually encountered at 10-15 inches below the surface and this lime zone may extend to 50 inches below the surface. Below the lime accumulation lies compact glacial "till" of variable thickness.

Solodized-Solonetz soils usually have a thin platy surface soil and a distinct claypan subsoil that is very hard when dry. The upper part of the claypan often has a light-colored zone 1-4 inches thick. This part should not be confused with the lime zone which lies below the claypan. "Slick spots" or "Scab land" occur with the Solonetz soils. These spots are barren and in some places constitute a large portion of the landscape.

Grumosols are soils that develop wide, deep cracks when they are dry. These soils contain large amounts of clay and are very sticky and plastic when wet and very hard when dry. Most of these soils are found in the western part of the county.

CROPS AND LIVESTOCK

Chouteau County is the largest agricultural income county in the state. Crops and livestock produced in 1959 had a total value of $22,534,900. Crops had a total value of $18,616,600 and livestock produce was valued at $3,918,300.

Chouteau County is large, geographically speaking, among Montana counties. It covers a total of 2.5 million acres with over 1,100,000 acres that are farmed, or 44%. This farm acreage indicates that a large proportion of the county is quite level.

A numher of rivers and streams form the drainage pattern in Chouteau County, the Missouri River being the largest stream crossing the county from west to east for a distance of approximately 100 miles. The Teton River winds through the western portion of the county for approximately 50 miles and the Marias River from the north, covers a distance of approximately 25 miles in the county. Belt Creek follows along the southwestern boundary of the county for about 10 miles. Highwood Creek, in the southwest and Shonkin Creek, in the south central part of the county, are 35 and 25 miles long respectively. Birch Creek is about 25 miles long and originates in the Bear Paw Mountains in the north. Highwood Creek, Birch Creek and Shonkin Creek are partially dry during some seasons.

Farming of irrigated lands accounts for only a small portion of the total farmed land in the county. The 1962 report of the State Board of Equalization shows that 4,734 acres of land was irrigated that year. Chouteau County has some large acreages of land along the river bottoms that could be irrigated.

Nearly all of the one million acres of dry farm land is farmed by the alternate crop-fallow method. Strip farming is practiced to minimize wind and water erosion. Summer fallow is used to preserve moisture and so that crop production can be more dependable and of higher quality.

The cattle population of the county has been at approximately 60,000 head for a number of years. Beef cattle production is the second largest industry in the county and accounts for about 17% of the total agricultural income. About 95% of the cattle are of the Hereford breed with the remainder being Angus. Sheep numbers have been declining gradually and only 7,500 were reported in 1960.

There were 900 milk cows reported on Chouteau County farms in 1960, this is less than one cow per farm. Many farms have no livestock because there is no water available and because many farmers live in town during the winter. An estimated 50% of the farms do not have milk cows and chickens.

Hog production has increased rapidly in recent years with approximately 20,000 hogs produced in 1963. Hog production has the advantage of making greater use of family labor and marketing home grown produce in the form of a finished product.

Cattle fattening has increased in recent years with approximately 15 feed yards built during the past 6 or 8 years. Expectations are that this trend will continue.

Average rainfall at Fort Benton, the county seat, is 14.74 inches and the frost free period average is 127 days. While not shown by weather records, average rainfall varies from an estimated low of 9 inches in the Marias River breaks area to a high of an estimated 17 inches in the Highwood Mountain area.

The irregular pattern of rainfall indicates that crop failures are expected to occur in the drier sections of the county, while crop failures are not expected to occur in other areas. Areas where farmers expect crop failures to occur include the area north of the Teton River, the area west of Big Sandy and the Hopp area south of Big Sandy. Crop failures are not expected to occur in the area around Highwood and south of Fort Benton, east of Fort Benton, and the area around Geraldine. Soil surveys indicate a much higher rainfall in these areas as compared to the other areas.

A considerable portion of the county is underlaid with Colorado blue shale which consists of a layer several hundred feet thick and being impervious to water. This layer has been responsible for the accumulation of sub-surface water in farmed areas around Highwood, Fort Benton, Geraldine, and Carter. Over a period of years water has apparently accumulated on the surface of the shale layer and has gradually begun to flow until it comes out on side hills and coulee bottoms. The result is numerous "alkali spots," covering many acres, making the soil too muddy to farm and too salty to grow plants. There are perhaps 2,000 to 3,000 acres of "alkali spots" on 300 or 400 farms in the area affected. Restoring this acreage involves growing grass on the areas affected or annual cropping instead of summer fallowing.

Sub-surface water distribution in the county is irregular. An estimated 250 farmers must haul water for their domestic and stock use. Shortages of sub-surface water includes areas on both sides of the Teton River, portions of Highwood Bench, and around the vicinity of Geraldine. Considerable water is hauled out of Geraldine, Highwood and Fort Benton, where provisions are made for loading truck mounted water tanks. Community wells have been installed on the Teton River to supply rural demands and include the Shannon Bridge well, the Buck Bridge well and a well at Woods Crossing.

SNOW SURVEY

Snow surveys are made to measure the snow depth and water equivalent of the mountain snow pack.

Measurements are obtained at periodical intervals during the snow accumulation season by two-man teams traveling on snowshoes, skiis, or in an oversnow vehicle or helicopter.

The amount of water in the snow, water stored in the soil and other climatological data are used to forecast the probable streamflow during the following spring and summer months.

From water supply forecasts, farmers and ranchers who depend on streamflow for irrigation can adapt their crop plantings to the anticipated water supply. Irrigation projects and reservoir operators can regulate delivery and storage of water to obtain the most beneficial use from the runoff. Other water management agencies can plan their operations before major runoff occurs.

The Rocky Boy snow course provides information on water supply from the south and west of the Bear Paw Mountains in Chouteau County. This snow course is located in the Missouri River drainage at an elevation of 5,200 feet and was established in 1941. The snow course number is 9AO1 and is measured March 1 and April 1 of each year.

Data from other snow courses are also used to forecast streamflow from the Missouri River headwaters above Chouteau County.

Current information on winter snow accumulation and water supply forecasts is available at the Soil Conservation Service, Bozeman, Montana.

STREAM GAGING STATIONS

The U. S. Geological Survey measures the flow of streams, cooperating with funds supplied by several State and Federal agencies. The results have been published yearly in book form by drainage basins as Water-Supply Papers through the year 1960. Beginning with 1961 the stream-flow records have been published annually by the U. S. Geological Survey for the entire state under the title "Surface Water Records of Montana." Data for 1961-65 and subsequent five-year periods will be published in Water Supply Papers. Prior to general issuance, advance copies of station records may be obtained from the U. S. Geological Survey. That agency's records and reports have been used in the preparation of this resume'.

Data given below covers the stream gaging records which are available for Chouteau County from the beginning of measurements through the water year 1962. The water year begins October 1 and ends September 30 of the following year.

Following are equivalents useful in converting from one unit of measurement to another:

(a) In Montana, one cubic foot per second equals 40 miner's inches.
(b) One acre-foot is the amount of water required to cover an acre one foot deep.
(c) One cubic foot per second will nearly equal two acre-feet (1.983) in 24 hours.
(d) A flow of 100 miner's inches will equal five acre-feet in 24 hours.
(e) One miner's inch flowing continuously for 30 days will cover one acre 1½ feet deep.

For reference purposes, the stream gaging stations are listed in downstream order.

Highwood Creek near Highwood

The staff gage was at the county road bridge 25 miles east of Great Falls. The drainage area is 57.8 square miles. Records are available from March 1905 through September 1906. The maximum gage height observed was 4.45 feet (discharge not determined) and no flow was reported at times. There was some diversion for irrigation above station.

Missouri River at Fort Benton*

The water-stage recorder is at the old highway bridge about 500 feet downstream from the new highway bridge at Fort Benton and 4 miles upstream from Shonkin Creek. The drainage area is 24,749 square miles. Records are available from October 1890 to date, (1963). The maximum discharge observed was about 140,000 cfs. (June 6, 1908) and the minimum, 320 cfs. (July 5, 1936). The average discharge for 72 years (1890-1962), the longest record of streamflow in the state, was 7,522 cfs. or 5,446,000 acre-feet per year. The highest annual runoff was 8,582,000 acre-feet (1894) and the lowest, 2,622,000 acre-feet (1937). There are diversions for irrigation of about 730,000 acres above the station.

Marias River near Loma*

The water-stage recorder is 3½ miles northwest of Loma and 6¾ miles upstream from mouth. The drainage area is 6,995 square miles, of which 518 square miles is probably noncontributing. Records are available from October 1959 to date, (1963). The maximum discharge was 3,050 cfs. (June 8, 1961) and the minimum daily, 80 cfs. (January 18, 1962). Flow regulated by Tiber Reservoir and four other reservoirs having a combined capacity of 177,870 acre-feet.

Teton River near Fort Benton

The wire-weight gage was located 5 miles northeast of Fort Benton. The drainage area is 1,989 square miles. Records are available from March 1929 through September 1932. The maximum discharge observed was 5,660 cfs. (August 22, 1932) and the minimum, no flow at times each year. There were many diversions for irrigation above the station.

Missouri River at Virgelle*

The water-stage recorder was 1½ miles east of Loma and half a mile downstream from the Marias River from February 1935 to September 1953. The drainage area at this site was 34,221 square miles. From October 1935 to the present (1963) the gage has been located half a mile southwest of Virgelle and 3 miles downstream from Spring Coulee. The drainage area at the present site is 34,379 square miles. Records are available from February 1935 to the present (1963). The maximum discharge was 122,000 cfs. (June 5, 1953) and the minimum daily, 638 cfs. (July 5, 1936). The average discharge for 27 years (1935-62) was 7,723 cfs. or 5,591,000 acre-feet per year. The highest annual runoff was 9,682,000 acre-feet (1948) and the lowest, 3,006,000 acre-feet (1937). There are diversions for irrigation of about 830,000 acres above station and regulation by 23 smaller irrigation and hydroelectric reservoirs in addition to Tiber and Canyon Ferry reservoirs.

Big Sandy Creek near Big Sandy

The water-stage recorder was 2½ miles southeast of Big Sandy. The drainage area is 83.3 square miles. Records are available from February 1946 through September 1951. The maximum discharge was 249 cfs. (March 23, 1947) and the minimum, no flow each year. The average discharge for 5 years (1946-51) was 3.05 cfs. or 2,210 acre-feet per year. The highest annual runoff was 5,220 acre-feet (1947) and the lowest, 252 acre-feet (1950). There were diversions for irrigation of hay meadows above and below the station.

Partial Records Stations and Miscellaneous Discharge Measurements.

In order to provide information on more streams than are covered by stream gaging stations, the U. S. Geological Survey has for several years been collecting some partial records. These are in addition to the miscellaneous discharge measurements which have always been reported. These partial records, when correlated with simultaneous discharges of nearby continuous-record stations, give fair indications of available flow.

There are about twenty low flow and about 175 crest-stage partial-record stations in the Missouri Basin in Montana. Operation of many of these began in 1959. Crest-stage gages are being operated in Chouteau County on four tributaries to the Marias River.

The partial record stations as well as the miscellaneous discharge measurements are listed at the end of each U. S. Geological Survey Water-Supply Paper or Surface Water Records report.

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*These gaging stations are now in operation (1964).

(Note: The U. S. Geological Survey has no publications on reservoirs in Chouteau County.)

ECONOMIC MINERAL RESOURCES

The mineral resources of Chouteau County, with the exception of underground water, are not of economic importance at this time (1963). The county does contain some of the igneous intrusive rocks of the southwestern part of the Bear Paw Mountains, and the unusually well differentiated intrusives of the Highwood Mountains (particularly Square Butte) stimulated a series of debates pertinent to different hypotheses of magmatic differentiation between geologists of a half century ago. Further, most of the intrusive igneous rocks of the Bear Paw's and Highwood's were placed in the classic "alkalic" suite by the famous old-time geologist, Esper P. Larsen. Square Butte has acquired considerable notoriety among geologists, and the igneous rock "shonkinite" was named for its occurrence in Shonkin Sag.

Metalliferous mineral deposits seem to be lacking in importance, though there are unverified reports of beryl in the vicinity of the Rocky Boy stock east of Big Sandy.

Fairly extensive oil and gas exploration has been conducted in Chouteau County, but the only discovery to date (1963) has been the Sherard or Birch Creek Anticline (Sec. 17, T. 25N., R. 17E.). A well drilled here in 1922 is reported to have initially yielded 3 to 20 million cubic feet of gas per day from depths of 1,050 and 1,750 feet. Records indicate the main gas produc-

ing horizon was the Eagle Sandstone. Other wells were drilled some 15 years later, and, though gas was encountered, the lack of a pipeline resulted in a shut-in and abandonment of the field. Prospects for future oil and gas exploration activities seem good, especially along the Sweetgrass arch and its eastern flank in western Chouteau County.

COAL

Chouteau County includes a portion of the Bear Paw Mountains coal field. The coal is mostly subbituminous in rank and occurs mostly in the Eagle Sandstone and Judith River Formation of upper Cretaceous age. The only fair-sized former coal mine, however, was in a fault block of Fort Union strata east of Big Sandy. In general, the economics of coal production are unfavorable, especially in the case of the Eagle and Judith River Formation coal. These are too thin and lenticular to allow commercial operations, and such coals can be utilized only by future advanced technology of underground gasification.

SODIUM SULFATE

A group of intermittent lakes with high concentrations of sodium sulfate are present in Chouteau County. These lakes occur in the famous Shonkin Sag, a topographically low area which carried the waters of the Missouri River in prehistoric glacial times. The lakes have no outlet and practically dry up during the summer season. They are named White Lake, Lost Lake, Big Lake, and Kingsburt or "Alkali" Lake. Location is a matter of common knowledge.

The concentration of sodium sulfate is due to many seasons of evaporative concentration of runoff water and inseepage of ground water. When the water is saturated, the grey to white crystals of sodium sulfate hydrate form in and on the muddy sides and bottom of the lakes.

The various hydrates of sodium sulfate salts are most widely used in the wood pulp and paper industry, but have a wide application to uses by a score of basic industries. Evaluation of the Chouteau County sodium sulfate deposits has not yet been completed due to the extreme difficulty and danger of working with the thick lake muds.

GROUND WATER

Most of the area of Chouteau County is covered by glacial drift, which is underlain by strata of the Colorado Shale in the western and most of the southern portion, and for the most part, by the Eagle Sandstone in the eastern and northeastern portions of the county.

Ground water is not readily available from the Colorado, and, if shallow sources are not available, it becomes necessary to drill to the Kootenai Formation at depths to over 2,000 feet. Deep wells, some of which are flowing wells, are not uncommon in Chouteau County.

The Eagle Sandstone constitutes a much shallower aquifer in northeastern and eastern Chouteau County. There have been problems involving water quality and yield from Eagle wells, for the Eagle seems to have a variable permeability or coefficient of transmissibility. This is particularly true in the general area north of Virgelle and Loma, where residents have been advised to drill into the Eagle where they encountered water rather highly mineralized because of restricted circulation.

Chouteau County has many water wells both shallow and deep. There are numerous filings under the provisions of the 1961 and 1957 statutes.

SOIL AND WATER CONSERVATION DISTRICTS

Chouteau County is served by two soil and water conservation districts. The Chouteau County SWCD, covering 1,651,800 acres was organized in 1943. The Big Sandy SWCD was organized in 1946, and covers 857,000 acres.

Each District is governed by a board of five supervisors who are elected by the land occupiers of the respective district. They carry out a program of complete resource conservation including erosion control, water conservation, soil management, land improvement, wildlife management, recreation, and land use adjustment. This program is accomplished by providing assistance to farmers and ranchers, on a voluntary basis, the analyzing of all resources, and the planning and applying of economically sound conservation treatment.

Under state law, the supervisors have the power to call upon local, state and federal agencies to assist in carrying out a soil and water conservation program. Both soil and water conservation districts have memoranda of understanding with the Soil Conservation Service, State Forestry Department and Extension Service to provide technical assistance to district cooperators in carrying out a sound soil and water conservation program. Close working relations are maintained with the Bureau of Indian Affairs, the Farmers Home Administration, the Agricultural Stabilization and Conservation Committee and the United States Forest Service.

The Soil Conservation Service assists the districts by furnishing and interpreting basic data on soils and plant cover and other features of the land. Technical data are interpreted in terms of acceptable alternative land uses and treatments to help guide the farm and ranch operator in developing sound conservation plans. It also aids district cooperators in performing operations requiring technical skills beyond the experience of the individuals involved.

The Office of the State Forester, and Forest Service cooperate with the district by coordinating the programs in timber management, tree planting, forest and range fire control and watershed management on Federal, State and private lands.

The Extension Service assists the district with its education and information program. An important function of each district is to inform land owners and occupiers of the benefits derived from wise use of the communities soil and water resources.

One of the major problems of these districts is to acquaint the urban people, who comprise a large percentage of the total population of the districts, with the need for conservation.

Technical phases of the districts' program include detailed soil surveys, forest site and utilization investigations, range site and condition surveys, ground water investigations, topographic and other engineering surveys. By a careful analysis of this basic resource information, proper land use, and needed conservation treatment of each field can be determined. The technician interprets the surveys and provides the district cooperator with alternatives in land use and treatment that will enable him to treat the hazards and limitations that occur on each tract of land. With this information and by counseling with the technician the farmer or rancher makes the final decisions. These decisions are recorded in the Conservation Plan. The cooperator determines what will be done on his place and when it will be carried out.

When the plan is completed, the cooperator is given further technical assistance on layout work essential in establishing conservation practices on the land as called for in the conservation plan. This technical assistance is provided without cost to the cooperating farmer or rancher.

There are 160,682 acres of federal lands in Chouteau County. Of the total area approximately 944,800 acres is cropland. It is estimated that about 8,300 acres are irrigated. Approximately 1,395,000 acres are devoted to pasture and range use of which 1,307,800 acres is native range and 87,500 acres is seeded dryland pasture and hayland. There are 39,000 acres of wooded land of which 32,000 acres are federally owned and 7,000 acres are small private ownerships. There are approximately 11,700 acres of land considered other land, such as townsites, roads and highways, railroads and like lands.

The major enterprise on agricultural lands is small grain production. Beef cattle, sheep and swine are also produced.

Work done since the organization of the district on irrigated lands consists largely of improvement of irrigation systems within the farm boundaries, installation of sprinkler systems, land leveling, construction of permanent ditches, installation of water control structures, farm drainage systems, improved cropping and pasture management systems, soil management and improvement of wildlife habitat. On dryland pasture and range the work done has been improvement of vegetative cover through seeding, deferred-rotation grazing, fencing, livestock water development and improvement of wildlife habitat. Work done on cropland includes strip cropping, stubble mulching, diversion ditches, grassed waterways and pot hole drainage.

Since the district was organized assistance has been given on conservation cropping systems on over 875,000 acres, improved water application 3,100 acres, land leveling and grading 2,600 acres, 20 sprinkler systems installed, drainage installed requiring 55 miles of ditch, over 190 structures installed, 185 miles of irrigation ditch construction, range improvement on 86,000 acres, pasture improvement on 35,000 acres, seeding of hay and pasture on 80,000 acres, 1,583 stock ponds constructed, 355 springs developed, 120 wells developed, 140 ponds stocked with fish, 13,200 acres improved wildlife habitat, 720 acres of trees planted, strip cropping 702,000 acres, stubble mulching 733,000 acres, diversion ditches 125 miles, and 333 acres of grassed waterways.

A considerable amount of conservation work has been accomplished through efforts of organized groups and this is encouraged wherever possible.

The most of the irrigation water used is delivered to the farm by private pump systems.

The Big Sandy Soil and Water Conservation District owns equipment consisting of a 4 row range interseeder which is available to district cooperators on a rental basis.

Cooperative efforts of land owners and operators, other groups and agencies have contributed to the overall success of the districts.

FISH AND GAME

If you like rivers with romantic names there is the Teton, Marias and Big Sandy. If you like big, wild, free rivers, then you have the Missouri that splits Chouteau County in half. From farm ponds to vast rivers, Chouteau County has varied waters to delight the sportsmen.

All of these streams are fish producers, with the upper regions producing trout while the lower portions have sauger, catfish and walleye. Small tributaries of the Highwoods produce brook and native cutthroat trout.

Species of big game animals that Lewis and Clark first described are still present with the exception of the bison.

White-tailed deer are found in the brushy river bottoms, while the mule deer roam just about anywhere. Early morning and late evening drives will reveal this numerous game species.

Pronghorned antelope, the speedsters of the plains, inhabit the sage brush areas of this county of contrasting game habitat.

The Highwood Mountains, located in the southern part of the county, still produce the majestic elk—Montana's most prized game animal. These elk are closely managed, through game harvests, so their use of range is coordinated with grazing and other land uses. A limited number of special elk permits are issued by drawing each year.

Before the plow and domestic stock were known to Montana, great numbers of grouse inhabited the prairies. As the soil was turned and planted, hungry animals stripped the land clear, grouse disappeared from many of their native haunts and became scarce in others.

On the well-grassed foothills and plateaus of the Highwoods, sharp-tailed grouse persist in numbers. Hungarian partridge are also here and good numbers of colorful ringnecked pheasants find the lower sag and coulees to their liking.

Water areas, farm ponds, lakes, and reservoirs are the home of the mallard, pintail, teal and Canada goose, as well as large numbers of shore birds.

Furbearing animals that once lured the trapper and fur-trader west are still found in numbers. The timber wolf is gone, but coyote, beaver, muskrat, mink and an occasional otter are present.

Because of the vast area and variety of habitat, Chouteau County offers much in the way of scenic beauty and outdoor recreation to the visitor or resident who likes to boat, hunt, fish, or just look around.

LEWIS AND CLARK NATIONAL FOREST

Highwood Mountains Forest Reserve was created December 12, 1903, by Presidential Proclamation. This Forest Reserve was consolidated with the Jefferson National Forest July 2, 1908. Jefferson National Forest was incorporated in the Lewis & Clark National Forest April 8, 1932. There are 31,181 acres of this National Forest in Chouteau County; 1,920 acres (6 percent) is in private ownership under patented homesteads.

At one time the area was an independent National Forest, composed of one Ranger District with headquarters on Highwood Creek. This National Forest area is now part of the Judith Ranger District of the Lewis & Clark National Forest.

National Forest land is managed under the multiple use concept of resource management. Use of the land is not limited to one resource; these public lands are managed for wood, water, forage, wildlife and recreation. Resource management is designed to avoid conflicts in the use of these lands. This permits—for example—cattle to graze during the summer on land elk and deer graze throughout the year. Also, cattle can graze National Forest lands in the fall that are used for camping and picnicking in the summer. All renewable National Forest resources are managed on a sustained yield basis to insure opportunities and privileges for future generations. All uses of these public lands are managed to control the quantity and quality of the basic resource: water.

Forage production areas are divided into management units called grazing allotments. Twenty-seven local ranchers graze 1,210 cattle on five paid grazing allotments on the Lewis & Clark National Forest in Chouteau County.

Timber production is not extensive on National Forest lands in Chouteau County. The area has a good timber production potential. At present production consists of posts, poles and house logs. Nearly all of the timber is young and growing vigorously. Much of the area was swept by forest fires in the late 19th and early 20th centuries. Four small sawmills operate adjacent to the National Forest lands; but, due to the age of the timber on these public lands, no National Forest timber is being sold for sawlogs. Many local ranchers harvest their posts and poles from the National Forest. Insects and disease are the greatest threat to timber production. At present there are no insect or pest infestations in this area of the Lewis & Clark National Forest.

Little of the National Forest in Chouteau County is accessible by road. This condition will persist for some time because of the expense of building and maintaining roads.

Sportsmen find many game animals on these public lands. Hunters take blue and ruffed grouse, mule and whitetail deer and elk. Early settlers reported there were no black bear in the area but found mountain lion and wolves. In recent years black bear have been sighted and killed in this area. National Forests are open to hunting and fishing, subject to the season, bag limits and license requirements of the Montana Fish and Game Commission.

During the fire season of the hot, dry summer months, the Forest Service gives high priority to fire suppression. The majority of forest fires in this area are lightning caused. There is usually at least one forest fire in this part of the Lewis & Clark National Forest each year. Fires here are often difficult to control because of steep terrain, lack of roads and high winds. Local residents, acutely conscious of the destruction of forest fires, are constantly on the lookout for smoke in these mountains. Often they are able to extinguish a forest fire on these public lands before Forest Service men and equipment can reach the scene. There are no lookout towers in the area.

Recreational-use of these public lands continues to increase. The Forest Service is now completing a new camp-picnic area with twenty-two family units. There are three summer homes on this National Forest land. Other special-use permits issued by the Forest Service include two cow camps, several pastures, a few stock fences and a television relay station.

While the mountains are steep, the area's water-producing capacity is good. There are two main watersheds; each has two tributaries. Also, there are two small watersheds in the area. Water produced on these public lands is used for watering livestock and irrigating hay on local ranches.

SUMMARY OF IRRIGATED LAND BY RIVER BASINS IN THE FOLLOWING COUNTIES COMPLETED TO DATE

Big Horn, Broadwater, Carbon, Carter, Cascade, Chouteau, Custer, Deer Lodge, Fallon, Gallatin, Golden Valley, Granite, Jefferson, Judith Basin, Lake, Lewis & Clark, Madison, Meagher, Missoula, Musselshell, Park, Pondera, Powder River, Powell, Ravalli, Rosebud, Silver Bow, Stillwater, Sweet Grass, Teton, Treasure, Wheatland, Wibaux and Yellowstone

RIVER BASIN	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
Missouri River Drainage Basin:			
*Missouri River	107,339.50	24,787.33	132,126.83
Jefferson River	61,291.00	9,713.00	71,004.00
Beaverhead River	40,771.00	6,076.00	46,847.00
Big Hole River	23,775.00	1,950.00	25,725.00
Madison River	39,445.00	7,660.00	47,105.00
Gallatin River	111,914.00	21,097.00	133,011.00
Smith River	32,934.00	19,679.00	52,613.00
Sun River	124,474.58	4,385.00	128,859.58
Marias River	114,685.42	13,415.88	128,101.30
Teton River	74,653.00	15,882.33	90,535.33
Musselshell River	64,789.00	57,870.00	122,659.00
Milk River	2,334.00	2,595.33	4,929.33
Yellowstone River	303,501.00	96,148.00	399,649.00
Stillwater River	27,489.00	16,403.00	43,892.00
Clark Fork River	91,768.00	24,195.00	115,963.00
Big Horn River	65,395.00	25,579.00	90,974.00
Tongue River	28,170.00	7,762.00	35,932.00
Powder River	35,948.00	2,299.00	38,247.00
Little Missouri River	42,513.00	1,499.00	44,012.00
Grand Total Missouri River Basin	**1,393,189.50**	**358,995.87**	**1,752,185.37**
Columbia River Drainage Basin:			
Clark Fork (Deer Lodge, Hellgate, Missoula) River	145,804.70	14,934.20	160,738.90
Bitterroot River	111,102.43	3,200.00	114,302.43
Flathead River	111,208.61	1,702.82	112,911.43
Grand Total Columbia River Basin	**368,115.74**	**19,837.02**	**387,952.76**
Grand Total in the Counties Completed To Date	**1,761,305.24**	**378,832.89**	**2,140,138.13**

*Names of streams indented on the left-hand margin indicate that they are tributaries of the first stream named above which is not indented.

IRRIGATION SUMMARY OF CHOUTEAU COUNTY BY RIVER BASINS

MISSOURI RIVER BASIN	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
*Missouri River	2,810.00	1,267.00	4,077.00
Highwood Creek	25.00	0	25.00
Unnamed Spring	20.00	11.00	31.00
Watkins Creek	51.00	0	51.00
Shaw Creek	11.00	0	11.00
Unnamed Coulee	10.00	0	10.00
Shonkin Creek	609.00	319.00	928.00
Lacey Creek	61.00	0	61.00
West Branch Shonkin Creek	102.00	25.00	127.00
Spring Creek	88.00	0	88.00
Keaster Creek	10.00	0	10.00
Sag Creek	0	0	0
Hop Creek	5.00	0	5.00
Harvey Well	2.00	2.00	4.00
Lemke Well	1.00	0	1.00
Schoonover Well	1.00	1.00	2.00
Rowe Coulee	45.00	0	45.00
Marias River	626.00	253.00	879.00
Unnamed Coulee	50.00	0	50.00
Teton River	1,027.00	901.33	1,928.33
Dry Fork Coulee	65.00	0	65.00
Beede's Coulee	0	35.00	35.00
Spring Coulee	0	15.83	15.83
Unnamed Coulee	27.00	0	27.00
Little Sandy Creek	69.00	0	69.00
Eagle Creek	465.00	0	465.00
Dog Creek	141.00	0	141.00
Cat Creek	37.00	0	37.00
Boylen Coulee	10.00	72.00	82.00
Spring Coulee	0	117.00	117.00
Sheep Coulee	30.00	0	30.00

*Names of streams indented on the left-hand margin indicate that they are tributaries of the first stream named above which is not indented.

IRRIGATION SUMMARY OF CHOUTEAU COUNTY BY RIVER BASINS

MISSOURI RIVER BASIN—(Continued)	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
Arrow Creek	0	0	0
Cottonwood Creek	1,757.00	0	1,757.00
Breed (Squaw) Creek	33.00	12.00	45.00
Timber Creek	43.00	0	43.00
Merrill Creek	0	0	0
Unnamed Spring	21.00	0	21.00
Cowboy (Steele) Creek	0	0	0
Round Butte Coulee	21.00	0	21.00
Steele Coulee	74.00	0	74.00
Kelley Creek	121.00	0	121.00
Unnamed Coulee	207.00	0	207.00
Butte Creek	88.00	0	88.00
Flat Creek	0	0	0
Willow (Morrill) Creek	77.00	0	77.00
West Fork Flat Creek	0	0	0
Unnamed Coulee	30.00	0	30.00
Panton Coulee	85.00	0	85.00
Mud Spring Coulee	0	0	0
Rattlesnake Canyon	0	0	0
Big Lake	0	0	0
Lepley Creek	33.00	0	33.00
Ranch Coulee	8.00	0	8.00
Chip Coulee	519.00	22.00	541.00
Drainage Basin	86.00	0	86.00
Sandstone Coulee	6.00	41.00	47.00
Sage Coulee	103.00	0	103.00
Eight Mile Coulee	101.00	0	101.00
Big Birch Creek	664.00	476.00	1,140.00
Ruhe Creek	0	37.00	37.00
Little Birch Creek	122.00	5.00	127.00
East Branch Little Birch Creek	0	4.00	4.00
Unnamed Spring	0	24.00	24.00
Coulee and Reservoir	37.00	0	37.00
Sand Creek	0	0	0

IRRIGATION SUMMARY OF CHOUTEAU COUNTY BY RIVER BASINS

MISSOURI RIVER BASIN—(Continued)	Present Irrigated Acres	Irrigable Acres Under Present Facilities	Maximum Irrigable Acres
Norden's Branch Sand Creek	0	15.00	15.00
Northwest Tributary Norden's Branch Sand Creek	12.00	0	12.00
Spring Creek	0	0	0
Olson Reservoir	31.00	0	31.00
Milk River	0	0	0
Big Sandy Creek	1,496.00	2,064.00	3,560.00
A Branch Big Sandy Creek	19.00	0	19.00
Godfry Creek	83.00	31.00	114.00
A Branch of Godfry Creek	11.00	0	11.00
Gorman Creek	68.00	252.00	320.00
Lonesome Lake Coulee	0	0	0
Lonesome Lake	0	0	0
Twelve Mile Coulee	0	0	0
Six Mile Coulee	0	248.33	248.33
Duck Creek	653.00	0	653.00
Box Elder Creek (Big)	4.00	0	4.00
Total	**13,011.00**	**6,250.49**	**19,261.49**

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

STREAM	APPROPRIATIONS (Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
MISSOURI RIVER BASIN							
*Missouri River	38	50,543.20	1,263.58				
Blackfoot Gulch	0	0	0				
Benton Lake Cut	0	0	0				
Benton Lake	0	0	0				
Valk Reservoirs	2	1,160.00	29.00				
Lake Creek	0	0	0				
North Fork of Lake Creek	1	1,800.00	45.00				
Benton Lake Muddy Creek	3	10,100.00	252.50				
Unnamed Coulee	1	80.00	2.00				
2 Unnamed Coulees	1	All	.....				
2 Unnamed Coulees	1	80.00	2.00				
Unnamed Coulee	4	550.00	13.75				
Unnamed Coulees	1	120.00	3.00				
Belt Creek	3	120.00	3.00				
Flat Willow	1	All	.....				
McAnelly Spring and Creek	1	160.00	4.00				
A Lake	1	200.00	5.00				
Unnamed Coulee	2	400.00	10.00				
Unnamed Coulee	1	200.00	5.00				
Unnamed Coulee	5	1,000.00	25.00				
Highwood Creek	22	6,046.00	151.15				
Fish Stream	1	All	.....				
Unnamed Springs	1	150.00	3.75				
Unnamed Spring	1	All	.....				
Unnamed Stream	2	All	.....				
2 Unnamed Springs	1	All	.....				
Spring Creek	1	.....	.....				
Pohlod Creek	1	150.00	3.75				
Waleber Creek	1	144.00	3.60				
North Fork Highwood Creek	0	0	0				
North Fork North Fork Highwood Creek	1	All	.....				
Harris Creek	2	200.00	5.00				
Price Creek	1	120.00	3.00				
Two Unnamed Coulees	1	160.00	4.00				
Two Unnamed Coulees	1	280.00	7.00				
Watkins Creek	1	160.00	4.00				
Shaw Creek	4	750.00	18.75				
Unnamed Stream	1	100.00	2.50				
Gap Creek	1	150.00	3.75				
Unnamed Coulee	1	80.00	2.00				
Unnamed Coulee	1	200.00	5.00				
Unnamed Springs	1	200.00	5.00				
Unnamed Coulee	1	300.00	7.50				
Unnamed Coulee	1	120.00	3.00				
Two Unnamed Springs	1	80.00	2.00				
Lofgren Coulee	1	80.00	2.00				
Unnamed Coulee	1	160.00	4.00				
Unnamed Spring and Coulee	1	60.00	1.50				

*Names of streams indented on the left-hand margin indicate that they are tributaries of the first stream named above which is not indented.

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

STREAM	APPROPRIATIONS (Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Ring Coulee	3	360.00	9.00				
Unnamed Coulee	1	80.00	2.00				
Unnamed Spring	1	80.00	2.00				
Scallie Coulee	1	280.00	7.00				
Cherry Creek	2	350.00	8.75				
Unnamed Coulee	2	300.00	7.50				
Unnamed Springs	2	All	.....				
Four Unnamed Coulees	1	240.00	6.00				
Unnamed Coulee	1	160.00	4.00				
Unnamed Spring	1	All	.....				
Unnamed Coulee	2	320.00	8.00				
Unnamed Coulee	1	320.00	8.00				
Two Unnamed Coulees	2	360.00	9.00				
Unnamed Coulee	1	160.00	4.00				
Unnamed Coulee	2	80.00	2.00				
Two Unnamed Coulees	1	400.00	10.00				
Long Coulee	3	980.00	24.50				
Total Highwood Creek and Tributaries	**80**	**14,160.00**	**354.00**				
Huntley Coulee	9	110,692.00	2,767.30				
Unnamed Coulee	2	360.00	9.00				
Tributary of Huntley Coulee	1	160.00	4.00				
Unnamed Coulee	1	160.00	4.00				
Big Coulee	1	7,500.00	187.50				
Two Unnamed Coulees	1	250.00	6.25				
Antelope Coulee	5	27,400.00	685.00				
Two Unnamed Coulees	1	All	.....				
Bulls Head Coulee	1	200.00	5.00				
South Fork Bulls Head Coulee	1	20.00	.50				
Twelve Mile Coulee	1	160.00	4.00				
Unnamed Coulee	1	480.00	12.00				
Unnamed Coulees	1	All	.....				
Unnamed Spring	1	All	.....				
Cherry Coulee	2	400.00	10.00				
East Branch Cherry Coulee	1	All	.....				
Unnamed Lake	1	1,000.00	25.00				
Unnamed Coulee	1	200.00	5.00				
Unnamed Coulee	1	80.00	2.00				
Unnamed Springs and Coulee	1	All	.....				
Short Coulee	1	All	.....				
Wright Coulee	1	80.00	2.00				
Bird Coulee	1	All Flood Waters	.....				
Rosebud Coulee	1	All	.....				
Shonkin Creek	21	6,340.00	158.50	521	2	.....	.....
O'Reilly Coulee	1	500.00	12.50				
Unnamed Spring	1	All	.....				
Middle Fork Shonkin Creek	2	500.00	12.50				
South Branch Shonkin Creek	3	100.00	2.50				
Three Branches Shonkin Creek	1	120.00	3.00				
A Branch, Shonkin Creek	4	380.00	9.50				
East Fork (Badger) Shonkin Creek	2	160.00	4.00				

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

STREAM	(Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Cecil Coulee Creek	1	40.00	1.00				
Postill Creek	1	80.00	2.00				
Unnamed Spring	1	20.00	.50				
Two Unnamed Coulees	1	80.00	2.00				
Martin Creek and Unnamed Spring	1	200.00	5.00				
Unnamed Coulee and Spring	3	920.00	23.00				
Lacey Creek	3	1,280.00	32.00				
West Branch Shonkin Creek	5	270.00	6.75				
East Tributary West Branch Shonkin Creek	1	240.00	6.00				
Unnamed Coulee	1	80.00	2.00				
Middle Creek	2	700.00	17.50				
West Fork Middle Creek	1	320.00	8.00				
Spring Creek	3	240.00	6.00				
Unnamed Coulee	1	200.00	5.00				
Carilla Creek	3	700.00	17.50				
Parsons Creek	2	200.00	5.00				
Keaster Creek	0	0	.....				
Two Branches of Keaster Creek	1	All	.....				
Unnamed Coulee	1	120.00	3.00				
Unnamed Creek	1	200.00	5.00				
Big Coulee & Spring	2	320.00	8.00				
Elmers Coulee	1	300.00	7.50				
Unnamed Creek	1	240.00	6.00				
Isabella Creek	2	250.00	6.25				
Sag Creek	2	360.00	9.00				
Sag Lake	1	160.00	4.00				
Unnamed Springs	2	All	.....				
Series of Unnamed Springs	1	200.00	5.00				
Three Unnamed Coulees	1	360.00	9.00				
Unnamed Spring	1	40.00	1.00				
Unnamed Coulee	1	All	.....				
Three Unnamed Gulches	1	200.00	5.00				
Hop Creek	1	200.00	5.00				
Unnamed Creek	1	200.00	5.00				
Witt Creek	1	500.00	12.50				
West Fork Witt Creek	1	200.00	5.00				
Unnamed Coulee	1	100.00	2.50				
Unnamed Coulee	1	120.00	3.00				
Smith Coulee	1	200.00	5.00				
Buck Coulee	1	200.00	5.00				
Shonkin Lake	0	0	.....				
Telephone Coulee	1	All	.....				
Windmill Coulee	1	160.00	4.00				
Patterson Coulee	1	200.00	5.00				
Black Butte Springs	1	400.00	10.00				
Big Coulee	1	All	.....				
Unnamed Coulee	2	100.00	2.50				
Spring Coulee	3	160 A.F. 780.00	19.50				
Unnamed Spring	1	200.00	5.00				

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

STREAM	APPROPRIATIONS (Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Nine Mile Coulee	3	160.00	4.00				
Unnamed Lake	3	960.00	24.00				
West Branch Nine Mile Coulee	3	400.00	10.00				
Two Unnamed Coulees	1	All	.....				
A Branch, Nine Mile Coulee	1	320.00	8.00				
Unnamed Coulee	1	80.00	2.00				
Unnamed Coulee	1	32,000.00	800.00				
Unnamed Coulee	1	640.00	16.00				
Rudolph Coulee	1	All Flood	.....				
Total Shonkin Creek and Tributaries	**118**	**54,540.00**	**1,363.50**				
O'Hanlon Coulee	1	2,000.00	50.00				
A Branch O'Hanlon Coulee	1	240.00	6.00				
East Fork O'Hanlon Coulee	1	400.00	10.00				
Early Coulee	3	640.00	16.00				
Sarvis Berry Coulee	1	320.00	8.00				
Unnamed Coulee and Spring	1	200.00	5.00				
Waste Water and Flood	1	All	.....				
Rowe Coulee	3	1,240.00	31.00				
Lost Creek	1	500.00	12.50				
Rocky Lake Coulee	3	360.00	9.00				
Unnamed Coulee	1	1,000.00	25.00				
Mud Lake	1	500.00	12.50				
Home Lake	1	200.00	5.00				
Sag (Flat) Coulee	1	200.00	5.00				
Unnamed Drainage	1	320.00	8.00				
Unnamed Coulee and Spring	1	150.00	3.75				
Marias River	25	32,500.00	812.50				
Pondera Coulee	0	0	.....				
Piser Coulee	1	120.00	3.00				
Basin Coulee	2	2,000.00	50.00				
Three Unnamed Coulees	1	50 A.F.	.....				
Dug Out Coulee	1	240.00	6.00				
Genore Coulee	1	500.00	12.50				
Three Unnamed Coulees	1	All	.....				
Surface and Runoff Waters	1	2,000.00	50.00				
Waters of Sec. 24, T. 26 N., R. 5E.	1	200.00	5.00				
Unnamed Coulee	1	All	.....				
Unnamed Coulee	1	320.00	8.00				
Unnamed Coulee and Spring	4	920.00	23.00				
Two Unnamed Coulees	2	720.00	18.00				
Unnamed Coulee	2	800.00	20.00				
Unnamed Coulee	1	120.00	3.00				
East Dug Out Coulee	1	All	.....				
Unnamed Coulee	1	40.00	1.00				
West Dug Out Coulee	2	640.00	16.00				
Dead Indian Coulee	3	360.00	9.00				

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

(Filings of Records)

STREAM	No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
A Branch Dead Indian Coulee	1	200.00	5.00				
Flat Coulee	0	0	.....				
West Branch Flat Coulee	1	160.00	4.00				
Dutch Coulee	1	2,000.00	50.00				
Three Unnamed Coulees	1	360.00	9.00				
		1700 A.F.					
Black Coulee	5	1,220.00	30.50				
Four Mile Coulee	2	240.00	6.00				
Brown Coulee	1	All	.....				
Unnamed Coulee	1	200.00	5.00				
Sheep Coulee	1	240.00	6.00				
Coxe's Coulee	2	520.00	13.00				
Daulton Coulee	1	403.60	10.09				
Unnamed Coulee	1	80.00	2.00				
Unnamed Coulee	2	240.00	6.00				
Key Coulee	3	684.40	17.11				
Lone Tree Coulee	2	80.00	2.00				
East Fork Lone Tree Coulee	6	840.00	21.00				
Gap Lake Coulee	1	200.00	5.00				
West Fork Lone Tree Coulee	1	200.00	5.00				
Drain Water	1	All	.....				
Unnamed Coulee	1	80.00	2.00				
Fisher Coulee	6	540.00	13.50				
Skit Creek	1	320.00	8.00				
Goosebill Coulee	2	2,000.00	50.00				
Hellgate Coulee	3	1,000.00	25.00				
Unnamed Coulee	1	320.00	8.00				
Unnamed Coulee	1	200.00	5.00				
Unnamed Coulee	1	320.00	8.00				
Slide Out Coulee	1	All	.....				
Unnamed Coulee	1	320.00	8.00				
Unnamed Lake	1	160.00	4.00				
Chip Creek	0	0	.....				
Chip Creek Lake	1	160.00	4.00				
Dry Fork (Embelton's) Coulee	3	820.00	20.50				
Unnamed Coulee	1	160.00	4.00				
Unnamed Coulee and Lake	1	160.00	4.00				
Unnamed Lake	1	320.00	8.00				
Dry Fork Coulee	7	21,430.00	535.75				
Unnamed Coulee	1	80.00	2.00				
Unnamed Coulee	1	80.00	2.00				
Middle Fork Dry Fork Coulee	3	520.00	13.00				
Unnamed Coulee	1	200.00	5.00				
Bird Coulee	1	All Flood Waters					
Eagle Coulee	1	All Flood Waters					
Mackey Coulee	1	All Flood Waters					
East Fork Dry Fork Coulee	0	0	.....				
Water Shed Sec. 25 and 36, T. 26N., R. 9E.	1	400.00	10.00				

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

STREAM	APPROPRIATIONS (Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Unnamed Coulee	1	500.00	12.50				
Teton River	30	9,780.00	244.50				
Timber Coulee	3	1,200.00	30.00				
Unnamed Coulee	1	50.00	1.25				
East Fork Timber Coulee	1	200.00	5.00				
East Branch East Fork Timber Coulee	3	680.00	17.00				
Alkalai Coulee	1	120.00	3.00				
Long Coulee	1	120.00	3.00				
Road Coulee	1	200.00	5.00				
Sheep Coulee	4	3,200.00	80.00				
Unnamed Spring	1	200.00	5.00				
West Fork Sheep Coulee	1	80.00	2.00				
Benton Coulee	1	400.00	10.00				
Unnamed Coulee	1	All	.....				
Unnamed Coulee	1	200.00	5.00				
Barnes Coulee	1	400.00	10.00				
Unnamed Coulee	1	80.00	2.00				
Unnamed Coulee	1	100.00	2.50				
A Tributary of Sheep Coulee	1	500.00	12.50				
Six Mile Coulee	8	3,680.00	92.00				
A Tributary Six Mile Coulee	1	200.00	5.00				
Unnamed Coulee	1	160.00	4.00				
Peterman Coulee	1	1,000.00	25.00				
Twenty Eight Mile Coulee	2	1,200.00	30.00				
O'Hearn Coulee	1	8,000.00	200.00				
Water Shed Sec. 21, 28, T. 26N., R. 4E.	1	50 A.F.	.....				
Two Unnamed Coulees	1	160.00	4.00				
Captain Nelse's Coulee	2	160.00	4.00				
Unnamed Coulee	3	360.00	9.00				
Grand Camp Coulee	1	200.00	5.00				
Middle Fork Grand Camp Coulee	1	200.00	5.00				
West Fork Grand Camp Coulee	1	200.00	5.00				
Unnamed Coulee	3	560.00	14.00				
Unnamed Coulee	1	400.00	10.00				
Two Unnamed Coulees	1	40.00	1.00				
Weatherwax Coulee	2	380.00	9.50				
Two Unnamed Coulees	3	440.00	11.00				
Unnamed Coulee	1	160.00	4.00				
Two Unnamed Coulees	1	320.00	8.00				
Two Unnamed Coulees	1	160.00	4.00				
Two Unnamed Coulees	2	320.00	8.00				
Lannings Coulee	1	400.00	10.00				
Unnamed Coulee	1	200.00	5.00				
Alkalai Spring	1	200.00	5.00				
Dry Fork Coulee	6	3,960.00	99.00				
Unnamed Spring	1	200.00	5.00				
East Dry Fork Coulee	3	480.00	12.00				
Unnamed Coulee	1	80.00	2.00				

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

STREAM	(Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Chimney Rock Coulee	2	240.00	6.00				
West Fork Chimney Rock Coulee	1	320.00	8.00				
Unnamed Coulee	1	160.00	4.00				
Bullberry Coulee	1	160.00	4.00				
Unnamed Coulee	1	160.00	4.00				
Unnamed Coulee	2	800.00	20.00				
Oder Coulee	1	All	.....				
Unnamed Coulee	1	320.00	8.00				
Davis Coulee	1	1,000.00	25.00				
Spring (8 Mile) Coulee	2	1,000.00	25.00				
Unnamed Coulee	1	240.00	6.00				
Series of Unnamed Springs	1	50.00	1.25				
Two Unnamed Coulees	1	320.00	8.00				
Unnamed Slough or Pond	1	All	.....				
Unnamed Coulee	1	160.00	4.00				
Government Coulee	1	200.00	5.00				
Two Unnamed Coulees	1	80.00	2.00				
Unnamed Spring	1	40.00	1.00				
Unnamed Coulee	1	40.00	1.00				
Total Teton River and Tributaries	**129**	**46,620.00**	**1,165.50**				
Total Marias River and Tributaries	**259**	**126,058.00**	**3,151.45**				
Beede's Coulee	3	716.00	17.90				
Kelley Coulee	1	200.00	5.00				
Two Unnamed Coulees	1	80.00	2.00				
Unnamed Coulee	2	460.00	11.50				
Churchill Coulee	1	200.00	5.00				
Crow Coulee	2	5,200.00	130.00				
Two Unnamed Coulees	1	2,000.00	50.00				
McClellan Coulee	1	All	.....				
Glory Coulee	1	All	.....				
A Branch Crow Coulee	1	160.00	4.00				
Six Mile Coulee	2	800.00	20.00				
Surprise Coulee	1	120.00	3.00				
Spring Coulee	6	244,170.00	6,104.25				
Right Fork Spring Coulee	1	4,000.00	100.00				
Unnamed Spring	1	4.00	.10				
Unnamed Coulee	1	120.00	3.00				
Jackson Coulee	1	80.00	2.00				
Kelley Coulee	1	200.00	5.00				
Two Mile Coulee	2	250.00	6.25				
Unnamed Coulee	1	160.00	4.00				
Coal Bank Coulee	8	6,680.00	167.00				
Cairo Coulee	4	12,240.00	306.00				
Cat Coulee	4	4,480.00	112.00				
Snake Coulee	2	8,400.00	210.00				
West Fork Coal Bank Coulee	2	4,400.00	110.00				
Lonesome Prairie Coulee	1	200.00	5.00				
Hammond Coulee	2	128.00	3.20				
Jackson Coulee	1	80.00	2.00				

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

STREAM	APPROPRIATIONS (Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Right Fork Coal Bank Coulee	3	4,520.00	113.00				
Sand Rock Coulee	1	100.00	2.50				
Little Sandy Creek	9	7,710.00	192.75				
West Branch Little Sandy Creek	2	1,100.00	27.50				
Unnamed Spring	1	All	.....				
A Branch Little Sandy Creek	1	100.00	2.50				
Verona Coulee	7	34,040.00	851.00				
Unnamed Coulee	1	All	.....				
Unnamed Coulee and Spring	1	80.00	2.00				
Alkalai Coulee	9	19,660.00	491.50				
Lone Tree Coulee	5	4,160.00 200 A.F.	104.00				
Rattlesnake Coulee	2	300.00	7.50				
Trout Creek	1	100.00	2.50				
Crow Coulee Sag	3	4,360.00	109.00				
Unnamed Coulee	1	160.00	4.00				
Crooked Coulee	3	640.00	16.00				
Unnamed Coulee	1	200.00	5.00				
Unnamed Coulee	1	80.00	2.00				
Eagle Creek	29	7,580.00	189.50				
Unnamed Spring	1	200.00	5.00				
Knox Creek	1	200.00	5.00				
Unnamed Swamp	1	200.00	5.00				
Erie Creek	1	120.00	3.00				
West Branch Eagle Creek	2	260.00	6.50				
Unnamed Creek	1	25.00	.62				
Little Eagle Creek	4	600.00	15.00				
Unnamed Spring	1	100.00	2.50				
Wagonhound Creek	1	2,000.00	50.00				
Dog Creek	16	22,515.00	562.88				
North Tributary Dog Creek	2	74.00	1.85				
Northeast Tributary Dog Creek	1	40.00	1.00				
Cat Creek and Tributaries	1	200.00	5.00				
Unnamed Springs	1	25.00	.62				
Unnamed Spring	1	20.00	.50				
Boylen Coulee	1	All	.....				
Unnamed Reservoir	1	200.00	5.00				
Flat Coulee (Creek)	2	1,400.00	35.00				
Drain Waters	1	200.00	5.00				
Unnamed Coulee	1	320.00	8.00				
Egan Creek	1	80.00	2.00				
Unnamed Spring and Tributaries	1	80.00	2.00				
Spring (Branch) Coulee	10	9,760.00	244.00				
East Branch Spring (Branch) Coulee	2	400.00	10.00				
Spring Creek	3	2,004.00	50.10				
Unnamed Coulees	1	25 A.F.	.....				

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

STREAM	APPROPRIATIONS (Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Sheep Coulee	2	400.00	10.00				
Unnamed Coulee	1	.....	.....				
Maybee Coulee	1	30 A.F.	.....				
Big Spring	1	160.00	4.00				
Unnamed Coulee	1	10 A.F.	.....				
Rock Coulee	1	160.00	4.00				
Twin Coulee	1	160.00	4.00				
Pugsley Coulee	1	200.00	5.00				
Winter Camp Coulee	2	2,200.00	55.00				
Unnamed Coulee	1	200.00	5.00				
Sherry Coulee	0	0	.....				
Bitter Spring or Coal Mine Coulee	1	160.00	4.00				
Unnamed Spring	1	320.00	8.00				
McLeish Coulee	1	All	.....				
Carlberg Coulee	2	80.00	2.00				
Unnamed Coulee	1	All	.....				
Cherry Tree Coulee	1	400.00	10.00				
Arrow Creek	5	1,260.00	31.50				
Spring Creek	2	400.00	10.00				
Cottonwood Creek (McDonald)	27	5,285.00	132.13	10043	6	1,399.24	34.98
Rock Corral Creek	1	All	.....				
Little Creek	1	200.00	5.00				
Circle Creek	1	120.00	3.00				
Three Unnamed Coulees	2	400.00	10.00				
Unnamed Coulee	1	80.00	2.00				
Corral Creek	1	80.00	2.00				
Breed (Squaw) Creek	3	240.00	6.00				
Tolan Creek	1	80.00	2.00				
Timber Creek	3	480.00	12.00				
Merrill Creek	6	1,340.00	33.50				
Unnamed Spring	1	80.00	2.00				
East Fork Merrill Creek	1	300.00	7.50				
West Fork Merrill Creek	1	300.00	7.50				
A Branch of Cottonwood Creek	4	840.00	21.00				
Girard Creek	9	1,700.00	42.50	9247	9	520.00	13.00
A Branch of Girard Creek	1	80.00	2.00				
Park Creek	1	600.00	15.00				
Unnamed Coulee and Spring	1	All	.....				
Unnamed Coulee and Spring	1	All	.....				
Unnamed Coulee	1	160.00	4.00				
Battle Creek	0	0	.....				
South Spring Creek	3	380.00	9.50				
Cowboy (Steele) Creek	0	0	.....				
Unnamed Creek	1	160.00	4.00				
Round Butte Coulee	2	360.00	9.00				
Steele Coulee (Creek)	2	160.00	4.00				
Spring Creek	1	120.00	3.00				
Unnamed Spring	1	200.00	5.00				
Kelley Creek	1	180.00	4.50				

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

STREAM	APPROPRIATIONS (Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Unnamed Spring	1	360.00	9.00				
Unnamed Coulee	2	400.00	10.00				
Basin Coulee	1	120.00	3.00				
Unnamed Creek	2	440.00	11.00				
Unnamed Coulee	1	200.00	5.00				
Butte Creek	3	750.00	18.75				
Square Butte Creek	2	280.00	7.00				
North Spring Creek	1	All	.....				
Unnamed Coulee	1	120.00	3.00				
Woodcock Coulee	0	0	.....				
South Branch Woodcock Coulee	1	160.00	4.00				
Flat Creek	17	5,490.00	137.25				
Libby Creek	4	1,800.00	45.00				
Four Unnamed Springs	1	160.00	4.00				
Unnamed Spring and A Branch Flat Creek	1	200.00	5.00				
Unnamed Coulee	3	440.00	11.00				
Willow (Morrill) Creek	6	2,480.00	62.00				
Unnamed Spring	1	All	.....				
Spring Creek	1	200.00	5.00				
Steffani Springs	1	100.00	2.50				
Morrill Spring	1	400.00	10.00				
Southwest Branch of Flat Creek	1	400.00	10.00				
West Fork of Flat Creek	3	690.00	17.25				
Unnamed Tributary of Flat Creek	1	160.00	4.00				
Lone Tree Creek	3	400.00	10.00				
Unnamed Springs and Coulee	1	160.00	4.00				
Unnamed Creek	1	160.00	4.00				
Willow Creek	1	250.00	6.25				
Unnamed Coulees	1	All	.....				
Kingsbury Lake	0	0	.....				
Cottonwood (Alder) Creek	0	0	.....				
Willow Spring Creek	1	120.00	3.00				
Snow Coulee	1	160.00	4.00				
Unnamed Spring	1	All	.....				
Flagler Spring Coulee	2	1,360.00	34.00				
Holmer Coulee	1	All	.....				
Winchell Springs	2	200.00	5.00				
Panton Coulee	3	620.00	15.50				
Mud Spring Coulee	1	200.00	5.00				
Two Unnamed Coulees	3	320.00	8.00				
Harwood Lake	1	80.00	2.00				
Thrailkill Sag	5	640.00	16.00				
Two Unnamed Coulees	1	240.00	6.00				
Unnamed Reservoir	1	600.00	15.00				
Unnamed Coulee	6	1,260.00	31.50				

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

STREAM	(Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Unnamed Coulee	3	240.00	6.00				
Unnamed Coulee	3	360.00	9.00				
Three Unnamed Coulees	1	200.00	5.00				
White Lake	0	0	.....				
Unnamed Coulee	1	320.00	8.00				
Rattlesnake Canyon	2	640.00	16.00				
Big Lake	0	0	.....				
Lepley Creek	6	1,240.00	31.00				
Mound Creek	1	150.00	3.75				
Little Cottonwood Creek	3	840.00	21.00				
Fox Creek	1	200.00	5.00				
All Br. Little Cottonwood Creek	1	320.00	8.00				
New Creek	1	320.00	8.00				
Two Unnamed Coulees	2	240.00	6.00				
Two Unnamed Springs	1	All	.....				
Martin Creek	3	300.00	7.50				
A Series of Springs	3	700.00	17.50				
Lost Lake	0	0	.....				
Unnamed Coulee	1	160.00	4.00				
Windy Coulee	1	320.00	8.00				
Unnamed Spring	1	40.00	1.00				
Unnamed Spring	1	100.00	2.50				
Unnamed Coulee	1	2,500,000.00	62,500.00				
Unnamed Coulee	1	800.00	20.00				
Water Shed	1	360.00	9.00				
Cut Bank (Coulee) Creek (Bad Route Creek)	6	1,280.00	32.00				
Total Arrow Creek and Tributaries	223	2,546,835.00	63,671.00				
Unnamed Coulee	1	All	.....				
Grab Coulee	1	160.00	4.00				
Dry Lake Coulee and Sag	3	8,480.00	212.00				
Chip Coulee	14	33,440.00	836.00				
Drainage Basin	1	1,600.00	40.00				
Unnamed Coulee to Runyon Reservoir	1	1,000.00	25.00				
Alkalai Coulee	1	1,440.00	36.00				
Lehfeldt Spring	1	160.00	4.00				
Berg Spring	1	4,000.00	100.00				
Unnamed Coulee	2	480,000.00	12,000.00				
Sandstone Coulee	3	160.00	4.00				
Sage Coulee	3	8,000.00	200.00				
Unnamed Spring	1	100.00	2.50				
Eight Mile Coulee	3	500.00	12.50				
Spring Coulee	1	200.00	5.00				
Bain Coulee	2	200.00	5.00				
King Coulee	1	200.00	5.00				
Bench Coulee	1	200.00	5.00				
Three Spring Coulee	2	240.00	6.00				

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

STREAM	APPROPRIATIONS (Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Pig Tail Coulee	0	0	.....				
P. W. Coulee	3	40,640.00	1,016.00				
Buffalo Coulee	1	All	.....				
Unnamed Spring and Coulee	1	All	.....				
Unnamed Coulees	1	All	.....				
Unnamed Coulee and Spring	1	160.00	4.00				
North Branch of Chip Creek or Parsons Coulee	1	3,000.00	75.00				
South Fork Eight Mile (Flat) Coulee	3	480.00	12.00				
Unnamed Spring	1	40.00	1.00				
Sage Creek	1	2,000.00	50.00				
Norris Coulee	1	320.00	8.00				
Chase (Hill) Coulee	3	12,620.00	315.50				
Big Birch Creek	23	88,470.00	2 211.75				
North Fork Big Birch Creek	0	0	.....				
Spring Creek	1	20.00	.50				
Tributary North Fork Big Birch Creek	5	870.00	21.75				
East Fork Big Birch Creek	8	20,660.00	516.50				
Grandma's Creek	1	20.00	.50				
Hatje Coulee	1	200.00	5.00				
Jone's Creek	1	20,000.00	500.00				
Unnamed Spring	1	20.00	.50				
Unnamed Spring	1	40.00	1.00				
Connelly Creek	2	420.00	10.50				
Ruhe Creek	1	80.00	2.00				
Unnamed Spring and Coulee	2	80.00	2.00				
Little Birch Creek	11	2,868.00	71.70				
East Branch Little Birch Creek	2	280.00	7.00				
Schillings Spring	3	240.00	6.00				
Two Rock Spring	1	80.00	2.00				
Spring Creek	1	200.00	5.00				
Antelope Spring Coulee	2	200.00	5.00				
Sand Creek	3	380.00	9.50				
Nordon's Branch of Sand Creek	3	160.00	4.00				
Northwest Tributary. Norden's Branch of Sand Creek	1	80.00	2.00				
Middle West Tributary of Sand Creek	1	80.00	2.00				
Spring Creek	2	480.00	12.00				
West Tributary of Sand Creek	1	80.00	2 00				
Coyote Coulee (Spring)	2	All	.....				
Dry Beaver Creek	1	400.00	10.00				
Left Fork Sand Creek	1	50.00	1.25				
Total Big Birch Creek and Tributaries	**88**	**136,458.00**	**3,411.45**				

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

APPROPRIATIONS

STREAM	(Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Milk River	0	0	.....				
Big Sandy Creek	49	46,040.00	1,151.00	652 & 1176	9	3,013.00	75.32
Flat Coulee	1	All	.....				
South Branch Big Sandy Creek	1	200.00	5.00				
No. Br. of S. Fork Big Sandy Creek	1	200.00	5.00				
St. Anthony Spring and Coulee	2	240.00	6.00				
DeMar Coulee	1	800.00	20.00				
A Branch, Big Sandy Creek	7	1,280.00	32.00				
Muddy Creek	0	0	.....				
Unnamed Coulee	1	600.00	15.00				
Unnamed Spring	1	400.00	10.00				
Spring Coulee	1	160.00	4.00				
Goin Creek	2	320.00	8.00				
Unnamed Coulee	1	160.00	4.00				
Goin Spring	1	400.00	10.00				
Debbon Creek	2	540.00	13.50				
Park Creek	1	100.00	2.50				
Frenchman Creek	2	400.00	10.00				
A Branch of Frenchman Creek	1	4,000.00	100.00				
Godfrey Creek	3	720.00	18.00				
A Branch of Godfrey Creek	1	160.00	4.00				
Scottish Creek	1	300.00	7.50				
Ihnsen Coulee	2	16,000.00	400.00				
Spring Coulee	1	200.00	5.00				
Snake (Reservoir) Coulee	4	3,820.00	95.50				
Two Unnamed Springs	1	200.00	5.00				
Branch of Big Sandy Creek	2	200.00	5.00				
Howard Coulee	1	16,000.00	400.00				
Unnamed Coulee	4	370.00	9.25				
Six Unnamed Coulees	1	200.00	5.00				
Gorman Creek	21	30,280.00	757.00	2422	3	600.00	15.00
Unnamed Stream	5	1,240.00	31.00				
Dipping Creek	12	1,970.00	49.25				
Unnamed Coulee	1	120.00	3.00				
Alkalai Coulee	2	320.00	8.00				
Cut Coulee	1	560.00	14.00				
Coal Creek (Coulee)	6	11,640.00	291.00				
Unnamed Spring	1	40.00	1.00				
Prairie Spring and Coulee	2	160.00	4.00				
School Section Coulee	1	200.00	5.00				
Lonesome Lake Coulee	2	600.00	15.00				
Unnamed Coulee	1	400.00	10.00				
Lonesome Lake	0	0	.....				
Well	1	160.00	4.00				
Twelve Mile Coulee	14	14,470.00	361.75				
West Branch Twelve Mile Coulee	1	240.00	6.00				

WATER RIGHT DATA—CHOUTEAU COUNTY

APPROPRIATIONS AND DECREES BY STREAMS

STREAM	APPROPRIATIONS (Filings of Records) No. of Filings	Miner's Inches	Cu. Ft. Per Sec.	DECREED RIGHTS Case No.	No. of Decrees	Miner's Inches	Cu. Ft. Per Sec.
Six Mile Coulee	18	10,940.00	273.50				
West Coulee	1	200.00	5.00				
Middle Fork Six Mile Coulee	1	200.00	5.00				
North Branch Six Mile Coulee	1	400.00	10.00				
O'Hanlon Coulee	1	2,000.00	50.00				
Duck Creek	14	3,070.00	76.75				
Dry Fork Coulee	3	800.00	20.00				
South Fork Duck Creek	1	160.00	4.00				
Camp Creek	5	2,200.00	55.00				
South Branch Camp Creek	1	80.00	2.00				
Centennial Coulee	1	4,000.00	100.00				
Sheep Coulee	1	8,000.00	200.00				
South Fork Coulee	1	800.00	20.00				
Williamson Coulee	1	4,000.00	100.00				
Lamb Pen Coulee	1	160.00	4.00				
Box Elder Creek (Big)	12	2,960.00	74.00	1553	5	1,168.00	29.20
Bartlet Coulee	1	400.00	10.00				
Total Big Sandy Creek and Tributaries	231	196,780.00	4,919.50				
Grand Total Chouteau County	1,399	4,323,977.20	108,099.43				

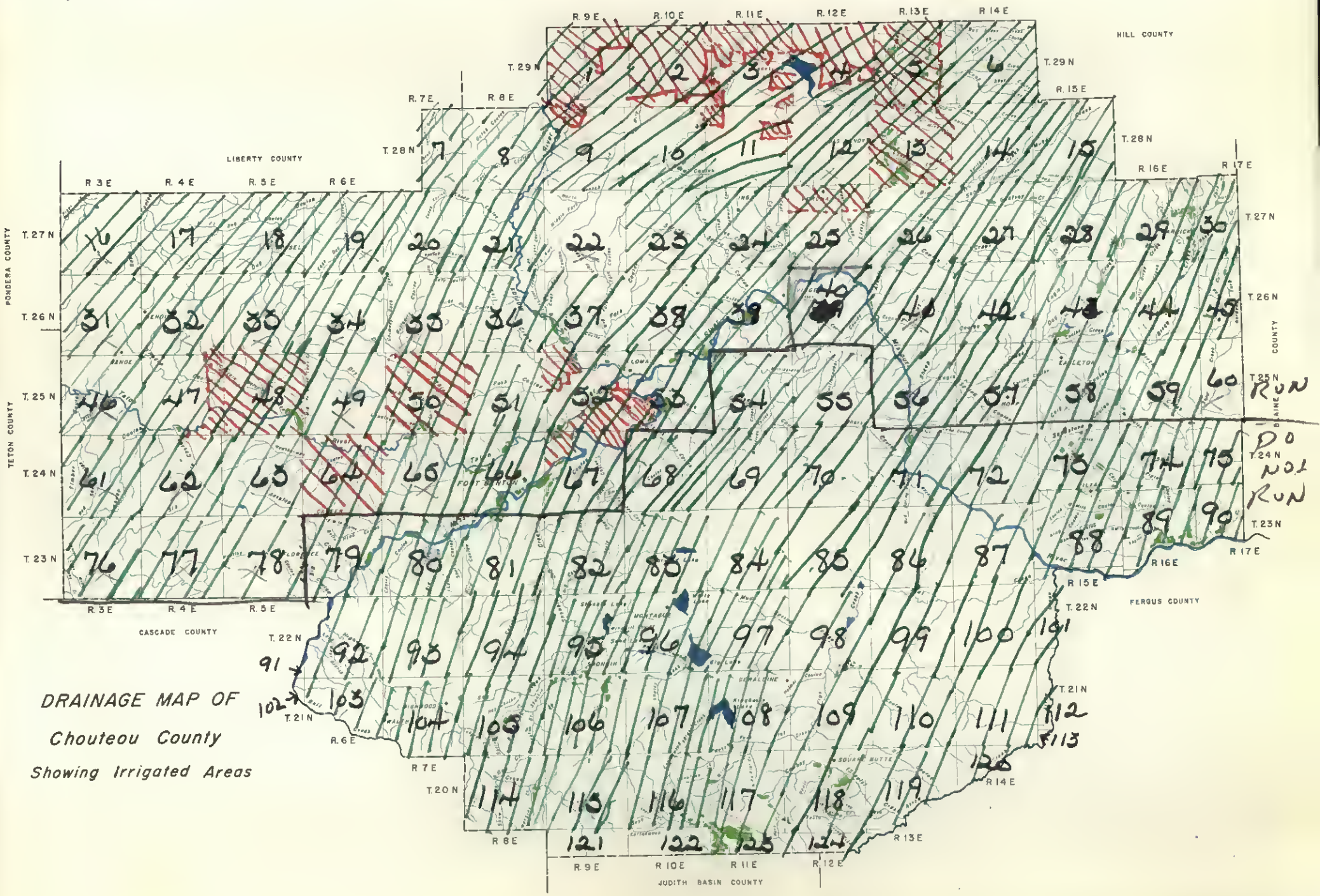
WATER RESOURCES SURVEY

Chouteau County, Montana

Part II

Maps Showing Irrigated Areas

Published by
STATE ENGINEER'S OFFICE
Helena, Montana
June, 1964


DRAINAGE MAP OF
Chouteou County
Showing Irrigated Areas
LIBERTY COUNTY
HILL COUNTY
PONDERA COUNTY
TETON COUNTY
CASCADE COUNTY
FERGUS COUNTY
JUDITH BASIN COUNTY
R. 3E
R. 4E
R. 5E
R. 6E
R. 7E
R. 8E
R. 9E
R. 10E
R. 11E
R. 12E
R. 13E
R. 14E
R. 15E
R. 16E
R. 17E
T. 29 N
T. 28 N
T. 27 N
T. 26 N
T. 25 N
T. 24 N
T. 23 N
T. 22 N
T. 21 N
T. 20 N
DO NOT RUN

MAP INDEX

ALL MAPS HAVE BEEN MADE FROM AERIAL PHOTOGRAPHS

MAP SYMBOL INDEX

BOUNDARIES

- COUNTY LINE
- NATIONAL FOREST LINE

DITCHES

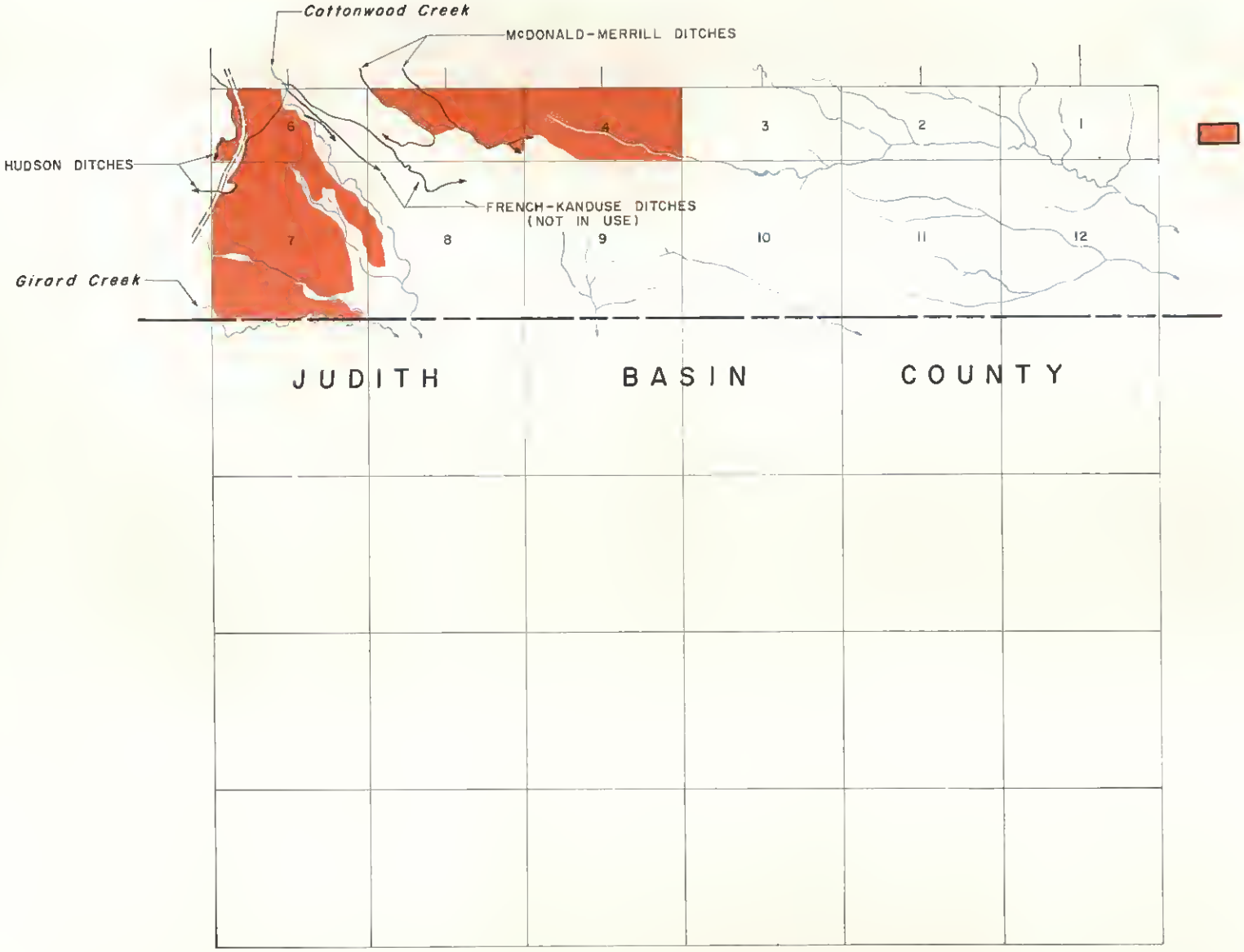
- CANALS OR DITCHES
- DRAIN DITCHES
- PROPOSED DITCHES

TRANSPORTATION

- PAVED ROADS
- UNPAVED ROADS
- RAILROADS
- STATE HIGHWAY
- U.S. HIGHWAY
- AIRPORT

STRUCTURES & UNITS

- DAM
- DIKE
- FLUME
- SIPHON
- SPILL
- SPRINKLER SYSTEM
- WEIR
- PIPE LINE
- PUMP
- PUMP SITE
- RESERVOIR
- WELL
- NATURAL CARRIER USED AS DITCH
- SPRING
- SWAMP
- GAUGING STATION
- POWER PLANT
- STORAGE TANK
- CEMETERY
- FAIRGROUND
- FARM OR RANCH UNIT
- LOOKOUT STATION
- RANGER STATION
- RAILROAD TUNNEL
- SCHOOL
- SHAFT, MINE, OR DRIFT

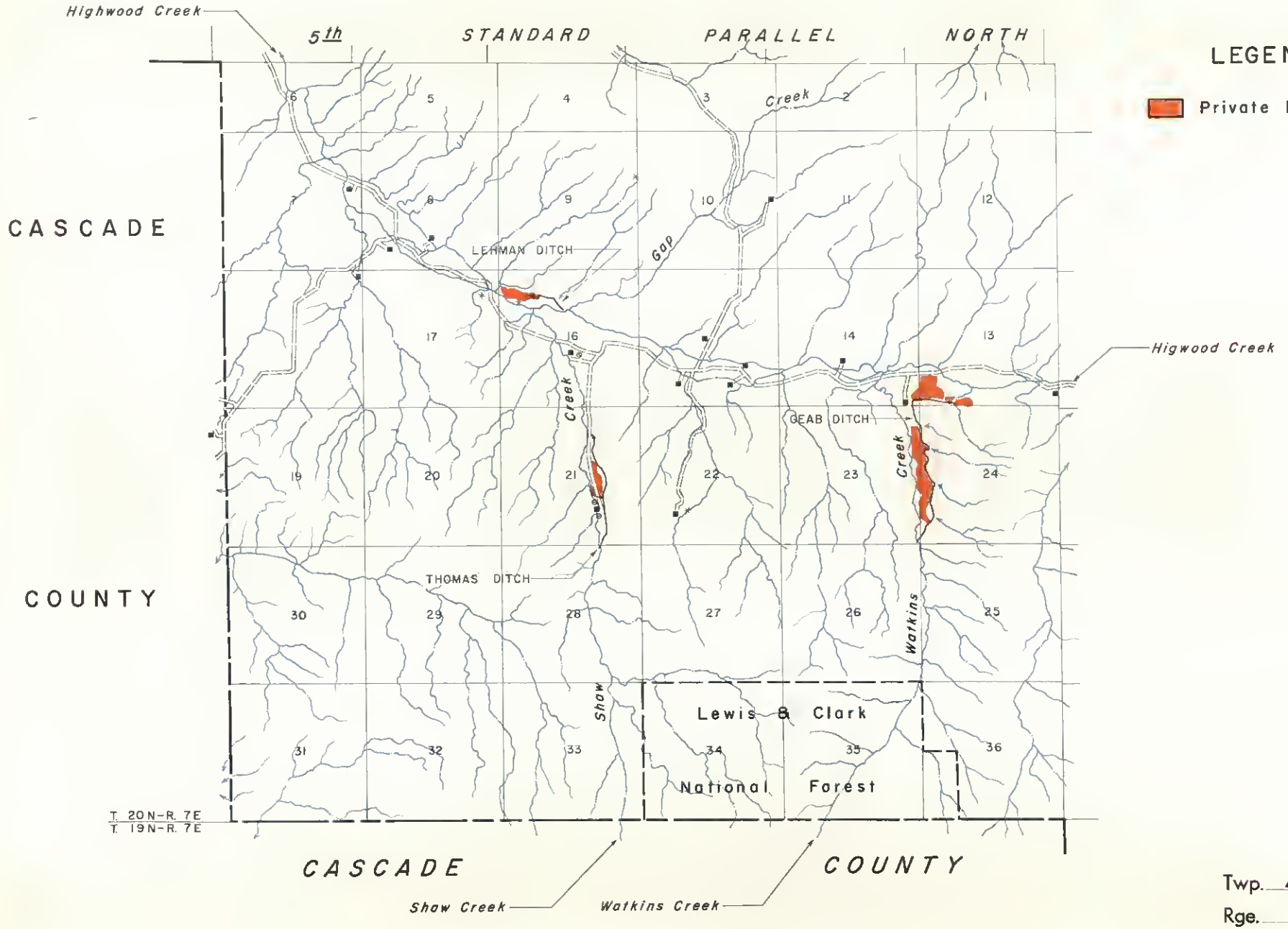


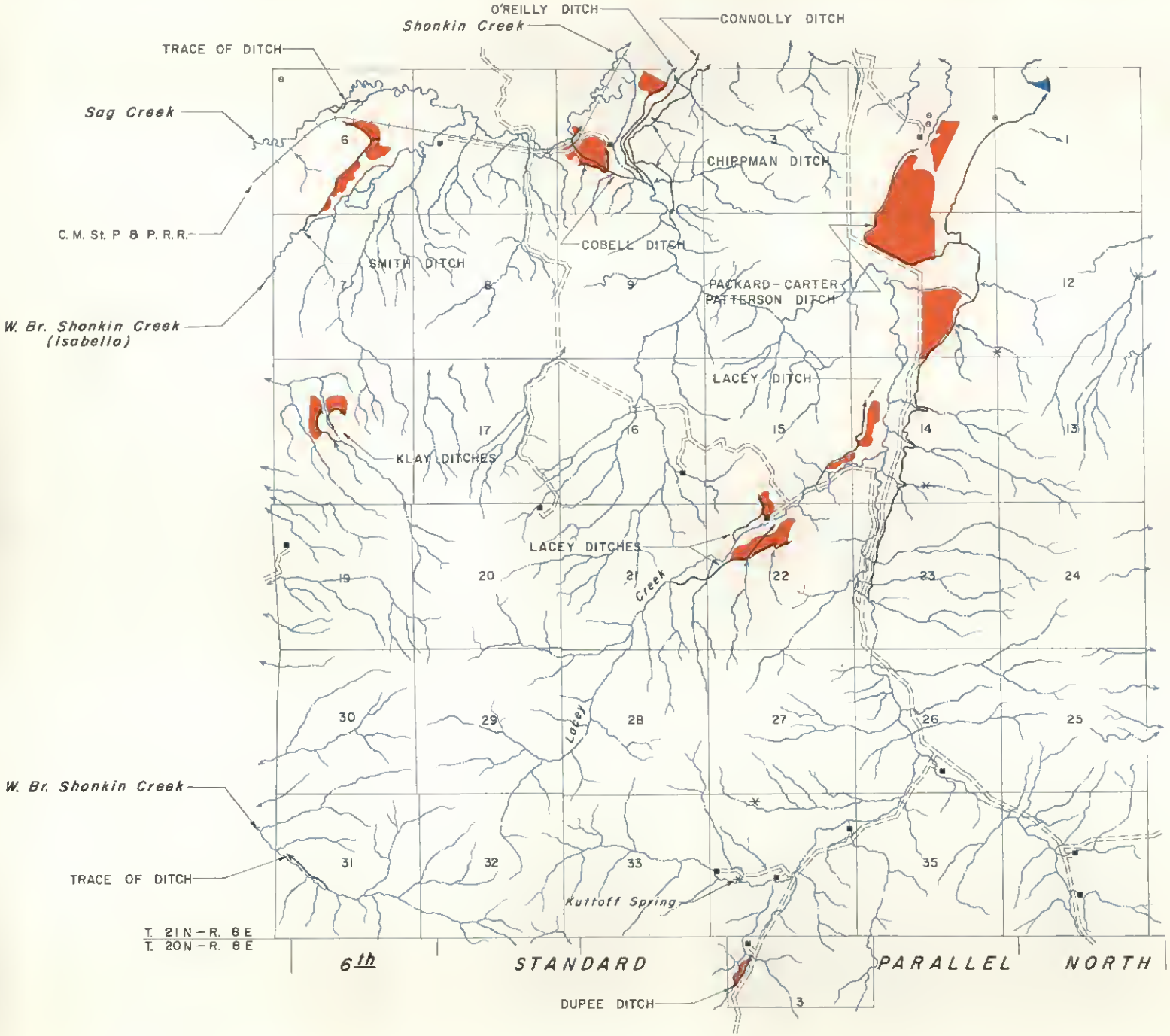
LEGEND

Private Irrigation

Twp. 19 North

Rge. 11 East


Highwood Creek
5th STANDARD PARALLEL NORTH
CASCADE COUNTY
LEHMAN DITCH
Gap Creek
Higwood Creek
GEAB DITCH
Creek
THOMAS DITCH
Shaw Creek
Watkins
Lewis & Clark National Forest
T. 20N-R. 7E
T. 19N-R. 7E
CASCADE COUNTY
Shaw Creek
Watkins Creek
LEGEND
Private Irrigation
Twp. 20 North
Rge. 8 East

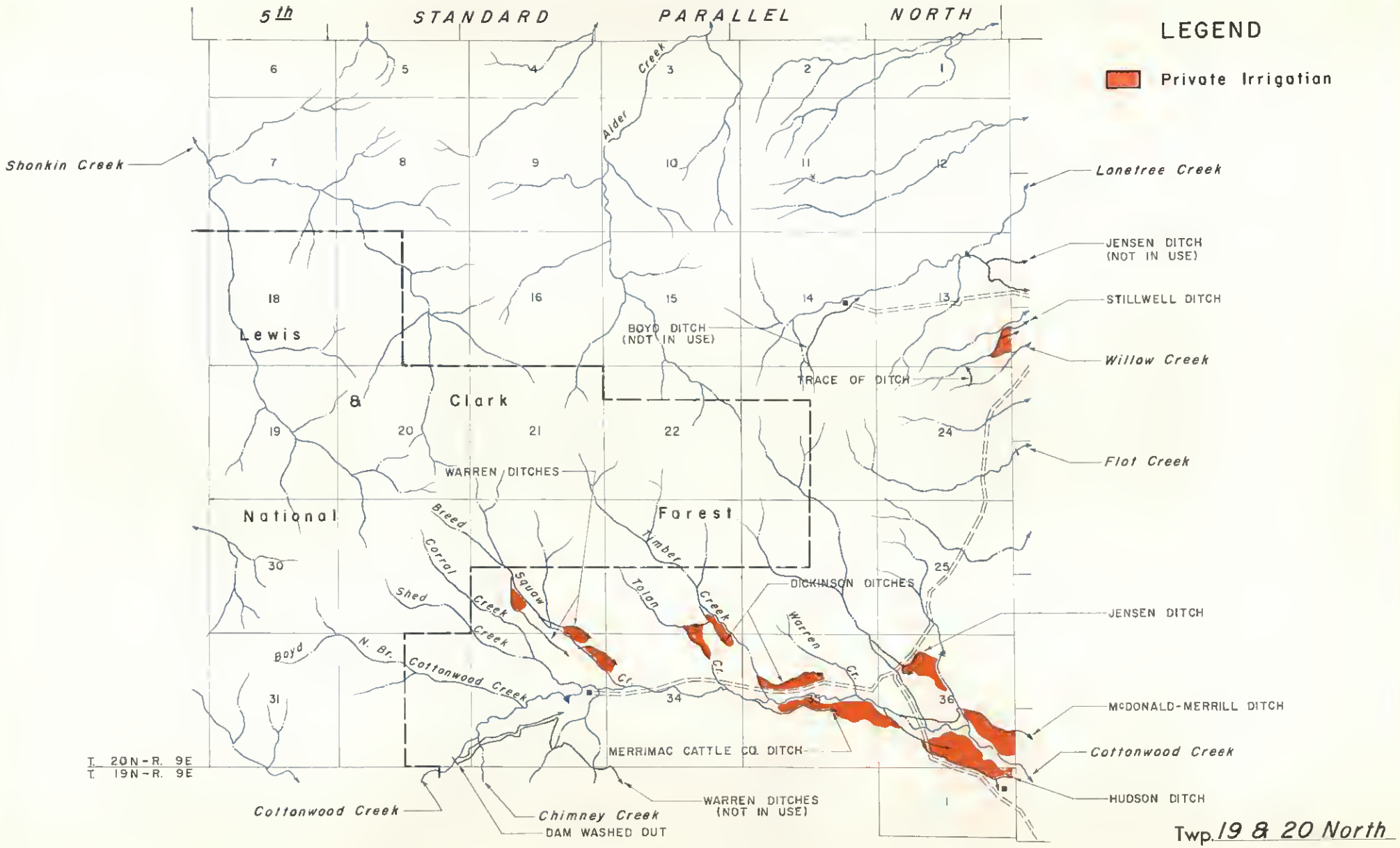


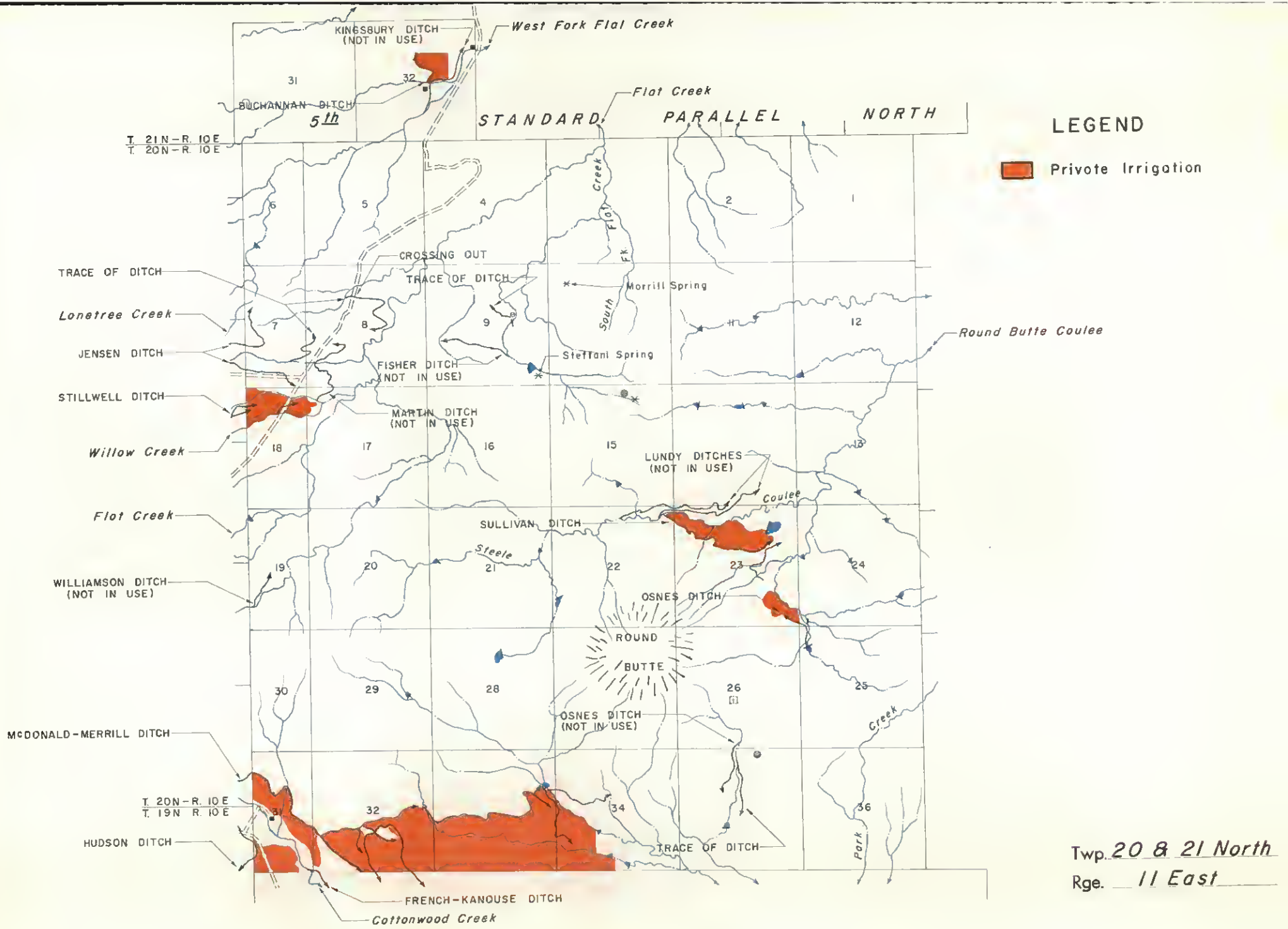
LEGEND

Private Irrigation

Twp. 20 & 21 North

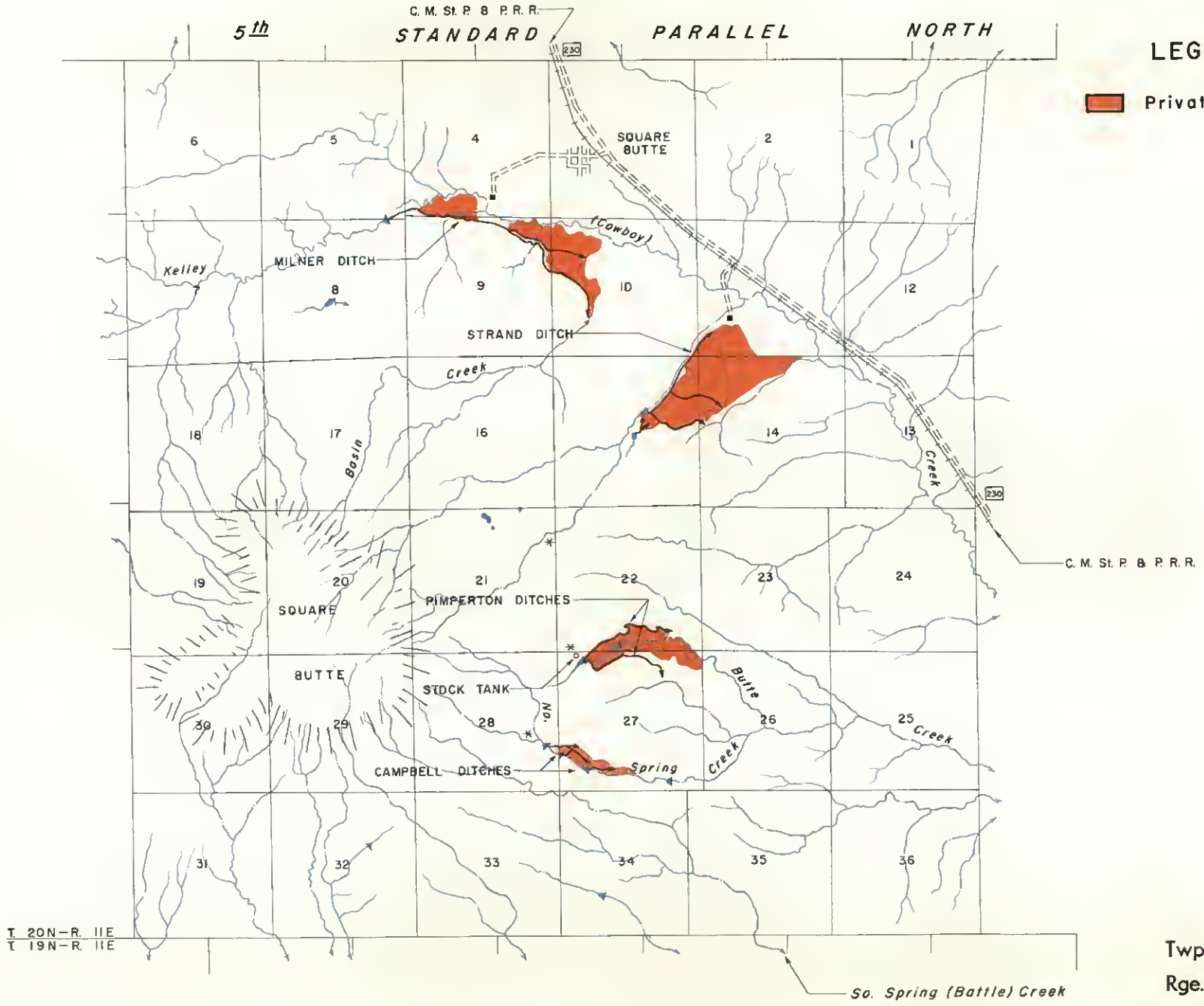
Rge. 9 East


5th STANDARD PARALLEL NORTH
LEGEND
Private Irrigation
Shonkin Creek
Alder Creek
Lonetree Creek
JENSEN DITCH (NOT IN USE)
STILLWELL DITCH
Willow Creek
BOYD DITCH (NOT IN USE)
TRACE OF DITCH
Lewis & Clark National Forest
WARREN DITCHES
Flat Creek
Breed Creek
Corral Creek
Squaw Creek
Timber Creek
Talon Creek
Shed Creek
Boyd Creek
N. Br. Cottonwood Creek
Warren Cr.
DICKINSON DITCHES
JENSEN DITCH
McDONALD-MERRILL DITCH
Cottonwood Creek
MERRIMAC CATTLE CO. DITCH
HUDSON DITCH
WARREN DITCHES (NOT IN USE)
Chimney Creek
DAM WASHED OUT
Cottonwood Creek
T. 20N-R. 9E
T. 19N-R. 9E
Twp. 19 & 20 North
Rge. 10 East



Twp. 20 & 21 North

Rge. 11 East

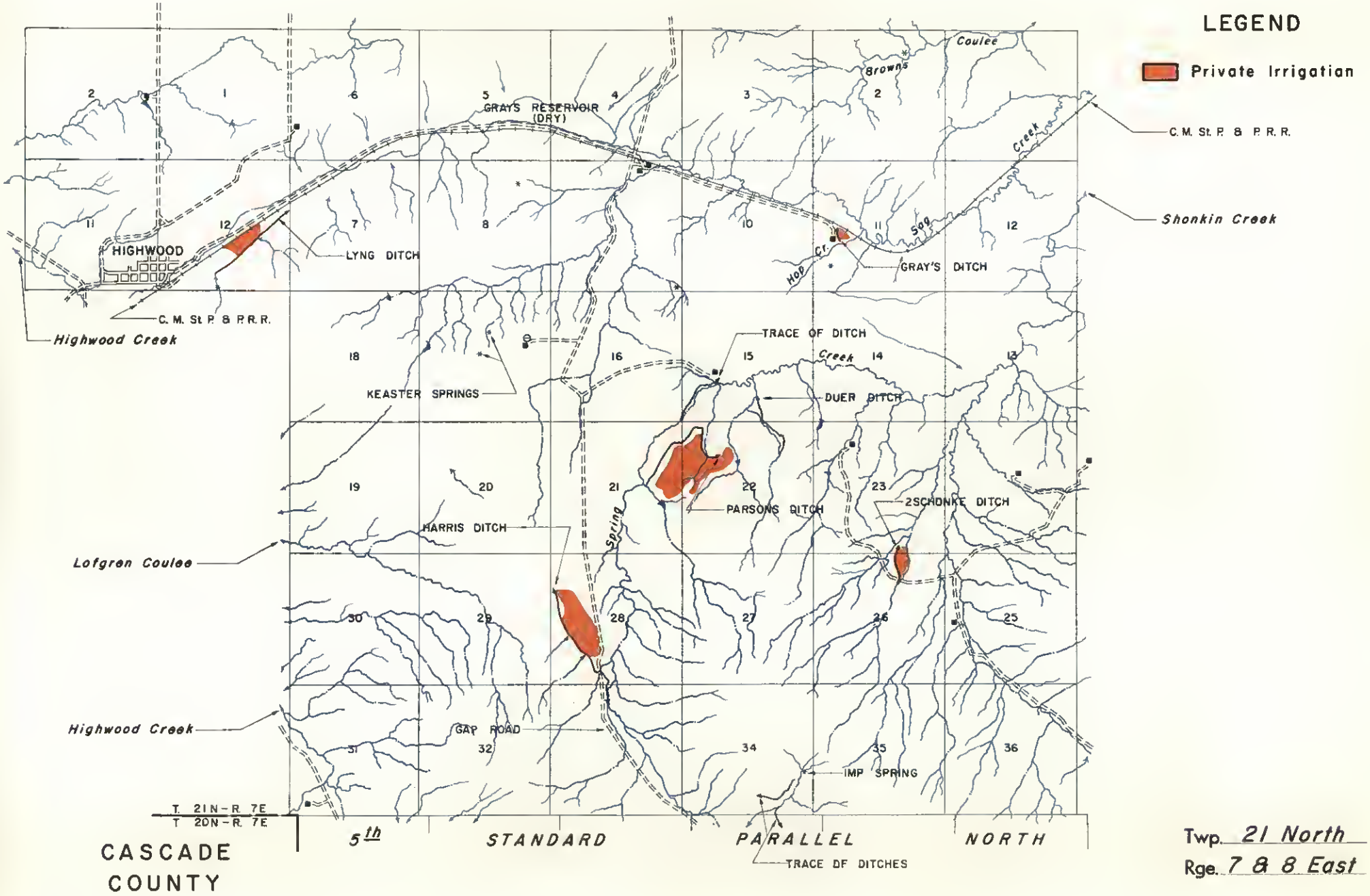


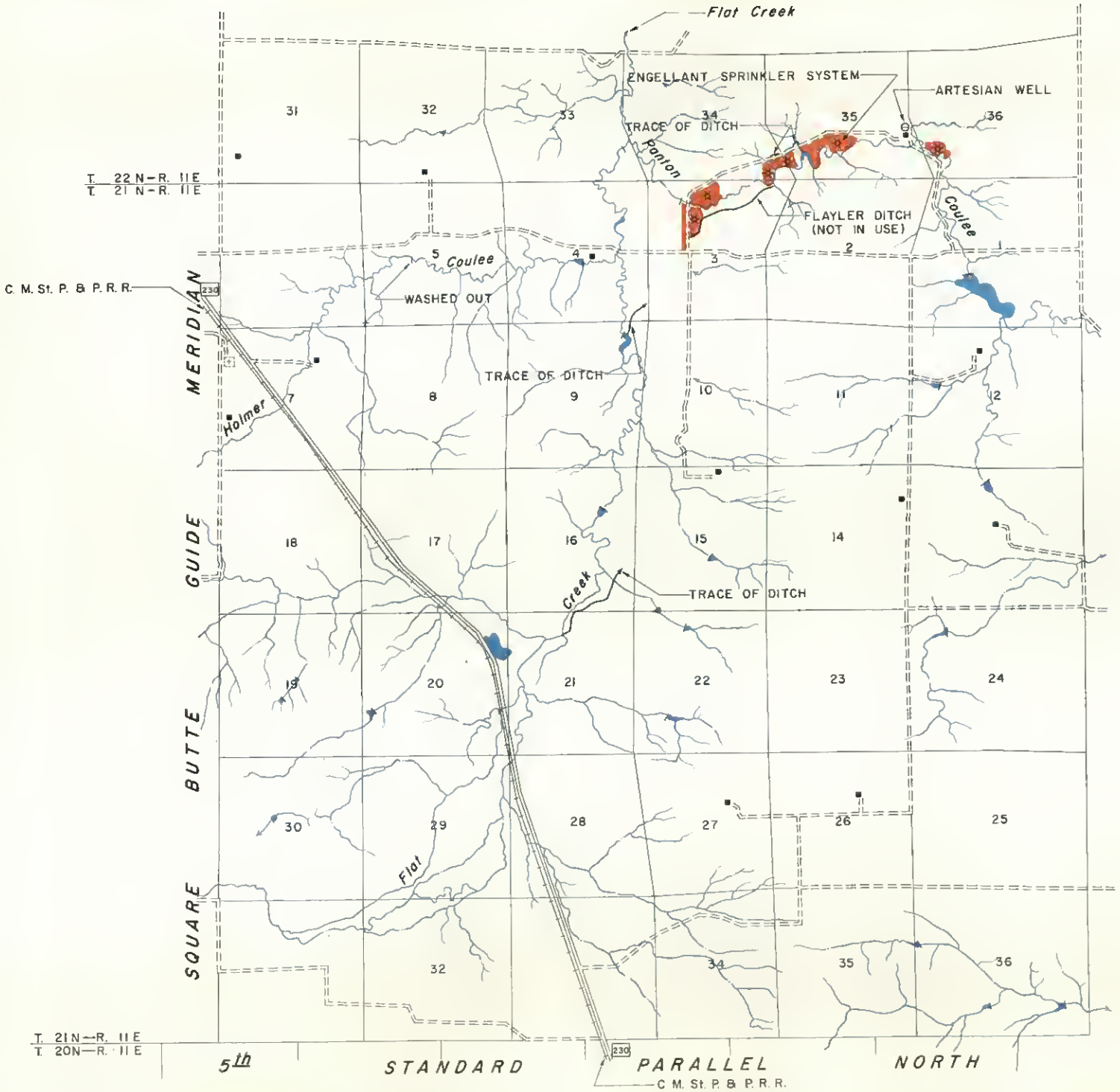
LEGEND

Private Irrigation

Twp. 20 North

Rge. 12 East


LEGEND
Private Irrigation
GRAYS RESERVOIR (DRY)
Browns Coulee
C. M. St. P. & P. R. R.
Shonkin Creek
HIGHWOOD
LYNG DITCH
GRAY'S DITCH
Sag Cr.
Hop
C. M. St. P. & P. R. R.
Highwood Creek
TRACE OF DITCH
KEASTER SPRINGS
DUER DITCH
Creek
PARSONS DITCH
2SCHONKE DITCH
HARRIS DITCH
Spring
Lofgren Coulee
Highwood Creek
GAP ROAD
IMP SPRING
T. 21N - R. 7E
T. 20N - R. 7E
5th STANDARD PARALLEL NORTH
TRACE OF DITCHES
CASCADE COUNTY
Twp. 21 North
Rge. 7 & 8 East

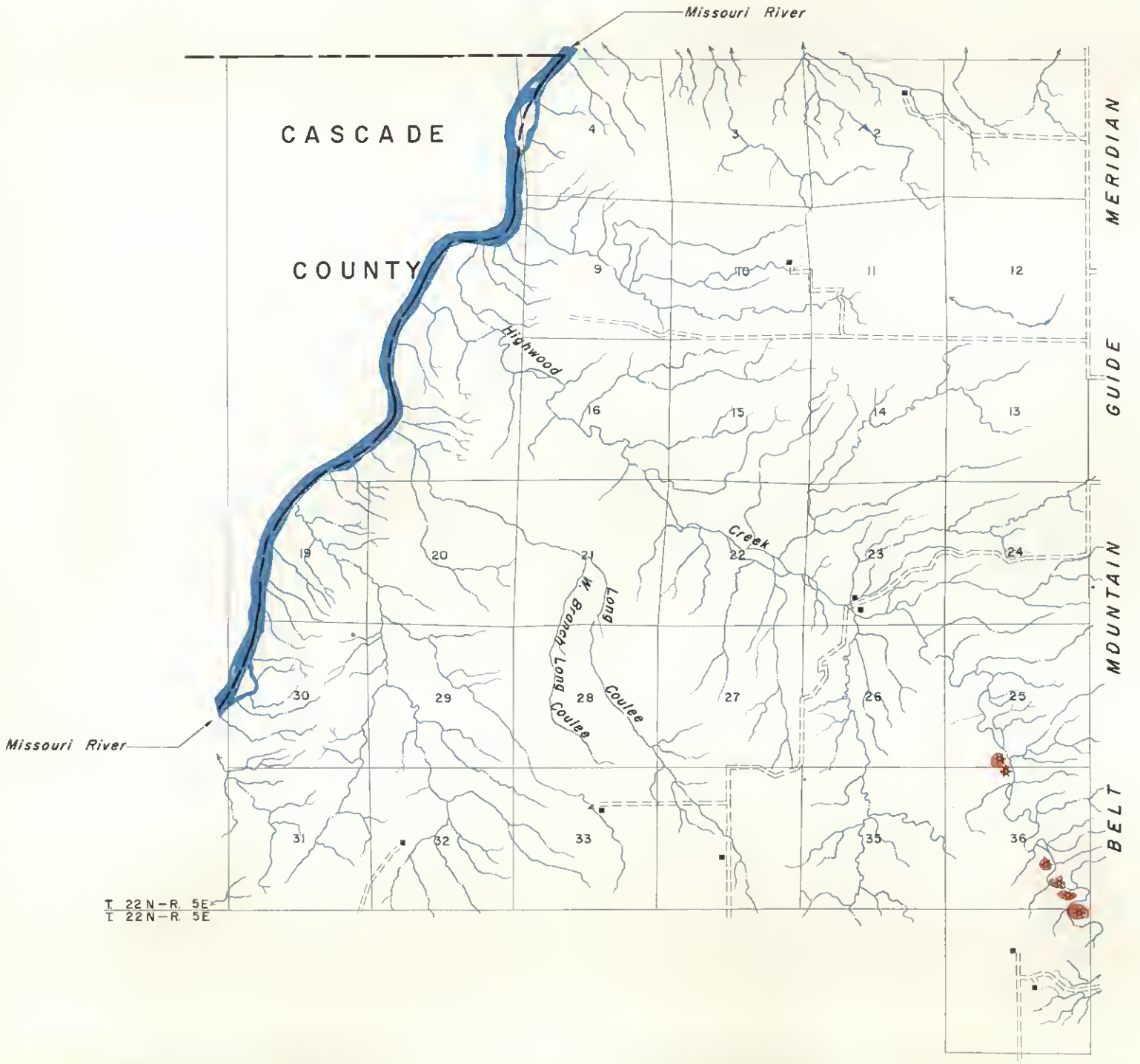


LEGEND

Privote Irrigotion

Twp. 21 & 22 North

Rge. 12 East

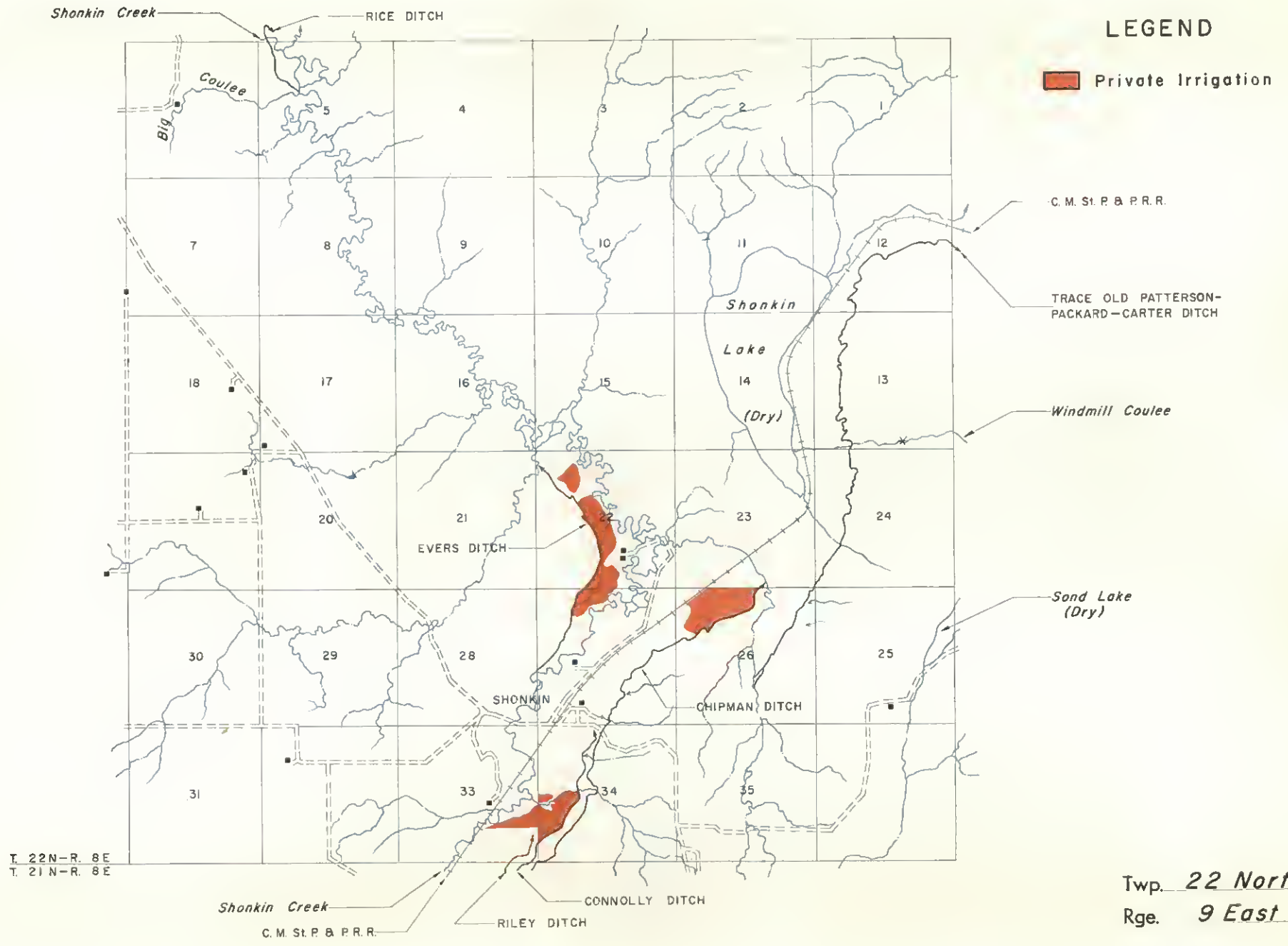


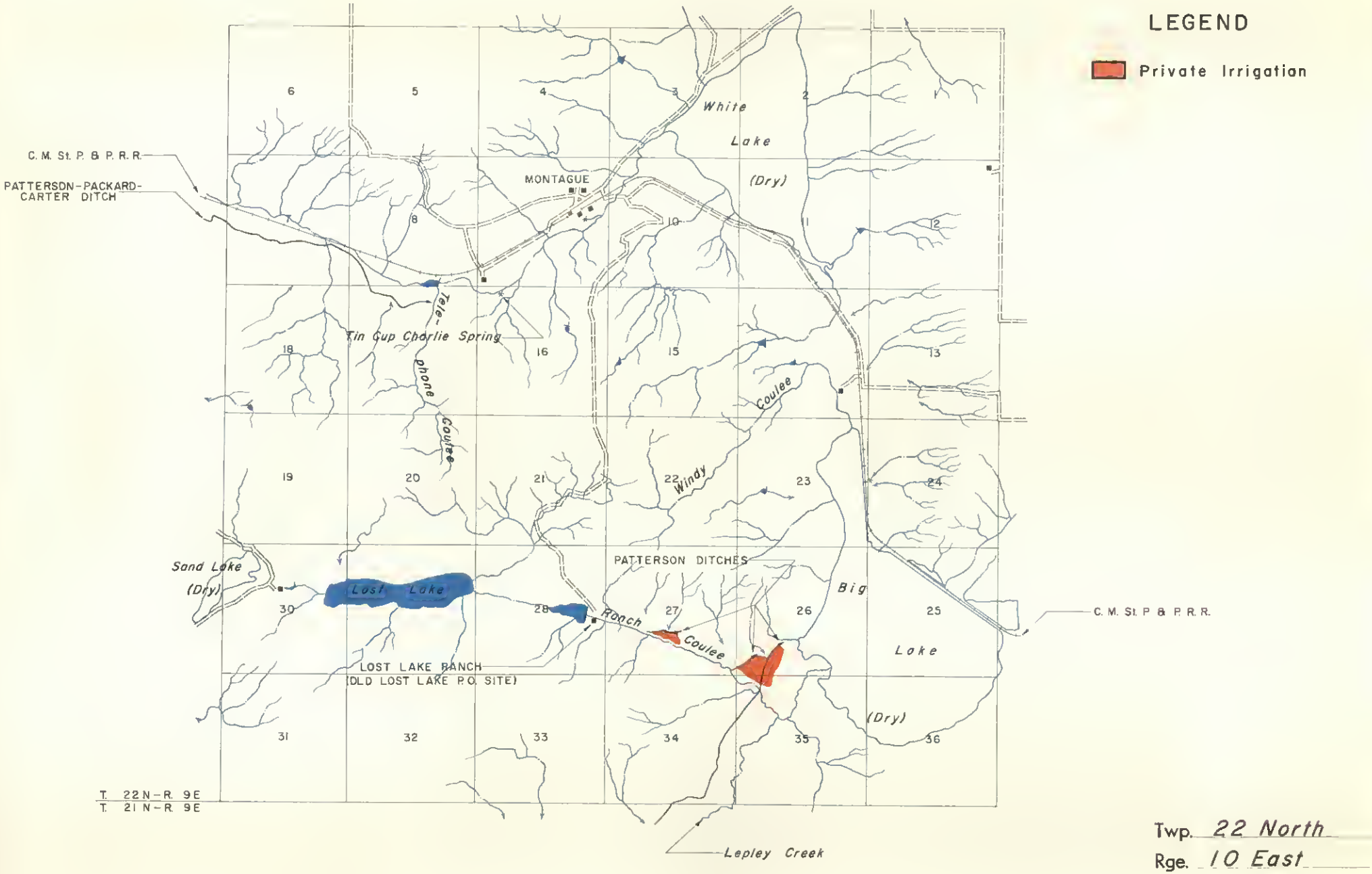
LEGEND

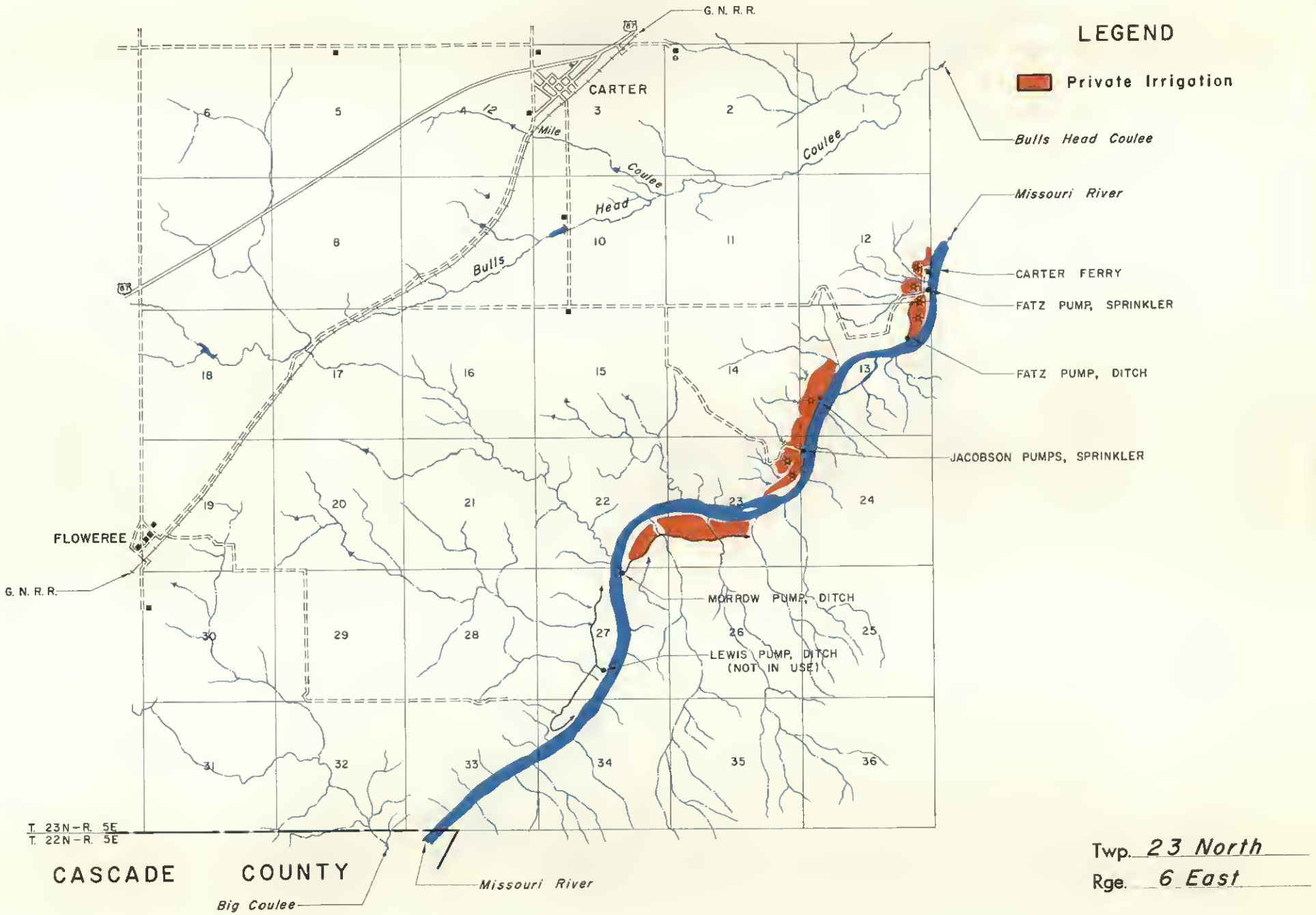
Private Irrigation

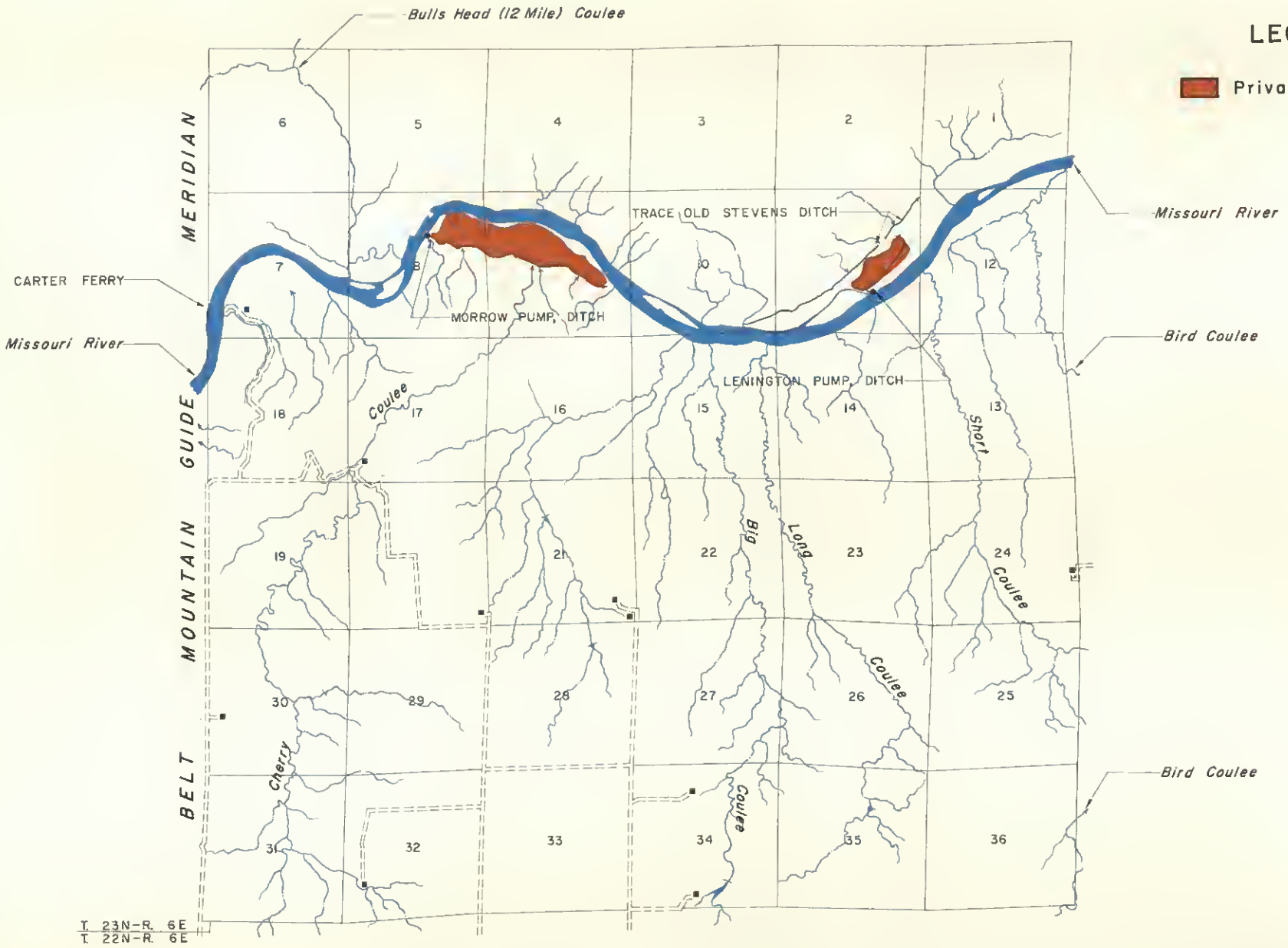
Twp. 21 & 22 North

Rge. 6 East


Shonkin Creek
RICE DITCH
Big Coulee
C. M. St. P. & P. R. R.
TRACE OLD PATTERSON-PACKARD—CARTER DITCH
Shonkin Lake (Dry)
Windmill Coulee
EVERS DITCH
Sond Lake (Dry)
SHONKIN
CHIPMAN DITCH
CONNOLLY DITCH
RILEY DITCH
Shonkin Creek
C. M. St. P. & P. R. R.
T. 22N—R. 8E
T. 21N—R. 8E
LEGEND
Private Irrigation
Twp. 22 North
Rge. 9 East

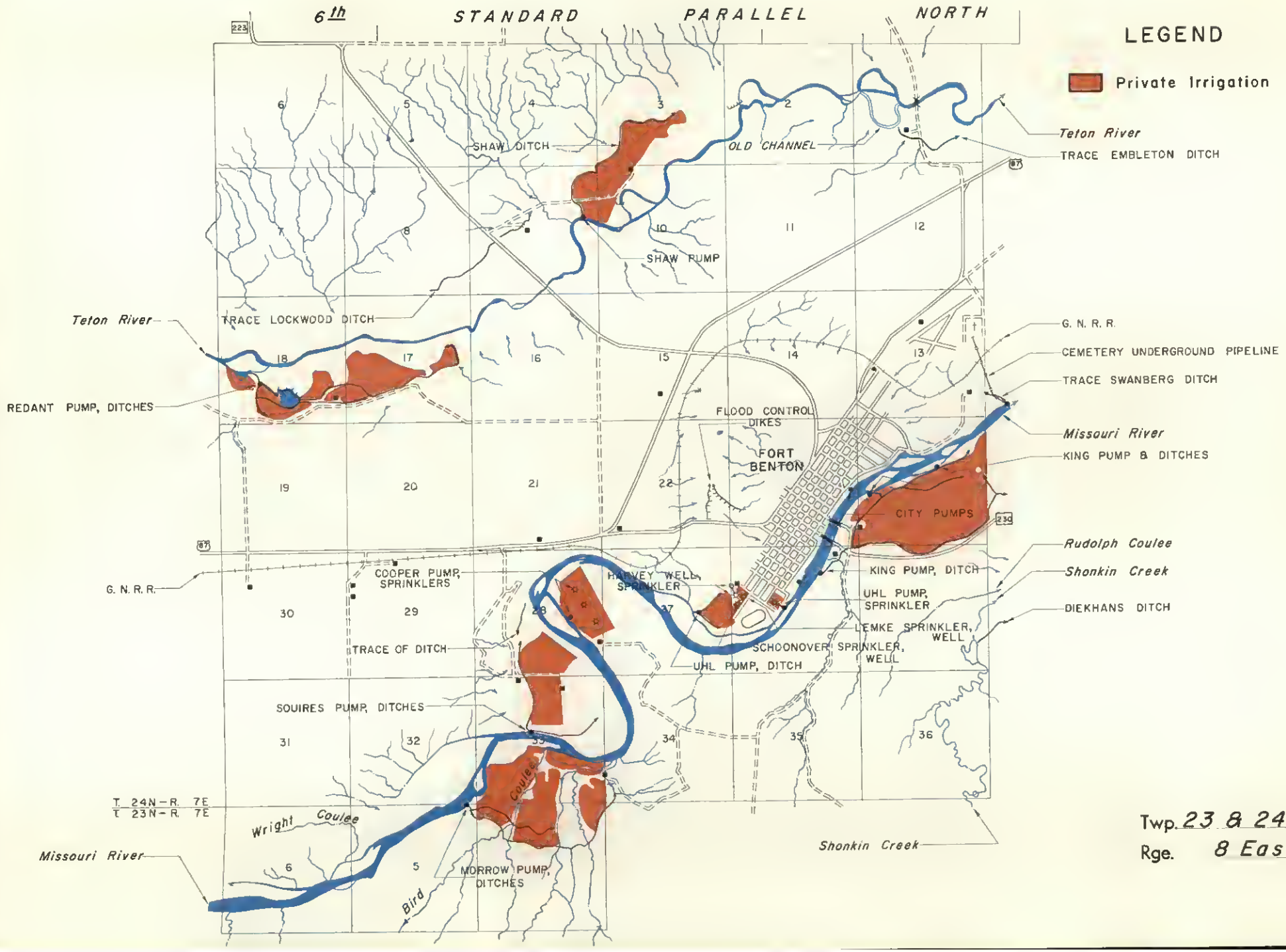

LEGEND
Private Irrigation
C. M. St. P. & P. R. R.
PATTERSON-PACKARD-CARTER DITCH
MONTAGUE
White Lake (Dry)
Tin Cup Charlie Spring
Tele-phone Coulee
Coulee
Windy
Sand Lake (Dry)
Lost Lake
PATTERSON DITCHES
Big Lake (Dry)
Roach Coulee
LOST LAKE RANCH (OLD LOST LAKE P.O. SITE)
C. M. St. P. & P. R. R.
Lepley Creek
T. 22 N - R. 9 E
T. 21 N - R. 9 E
Twp. 22 North
Rge. 10 East

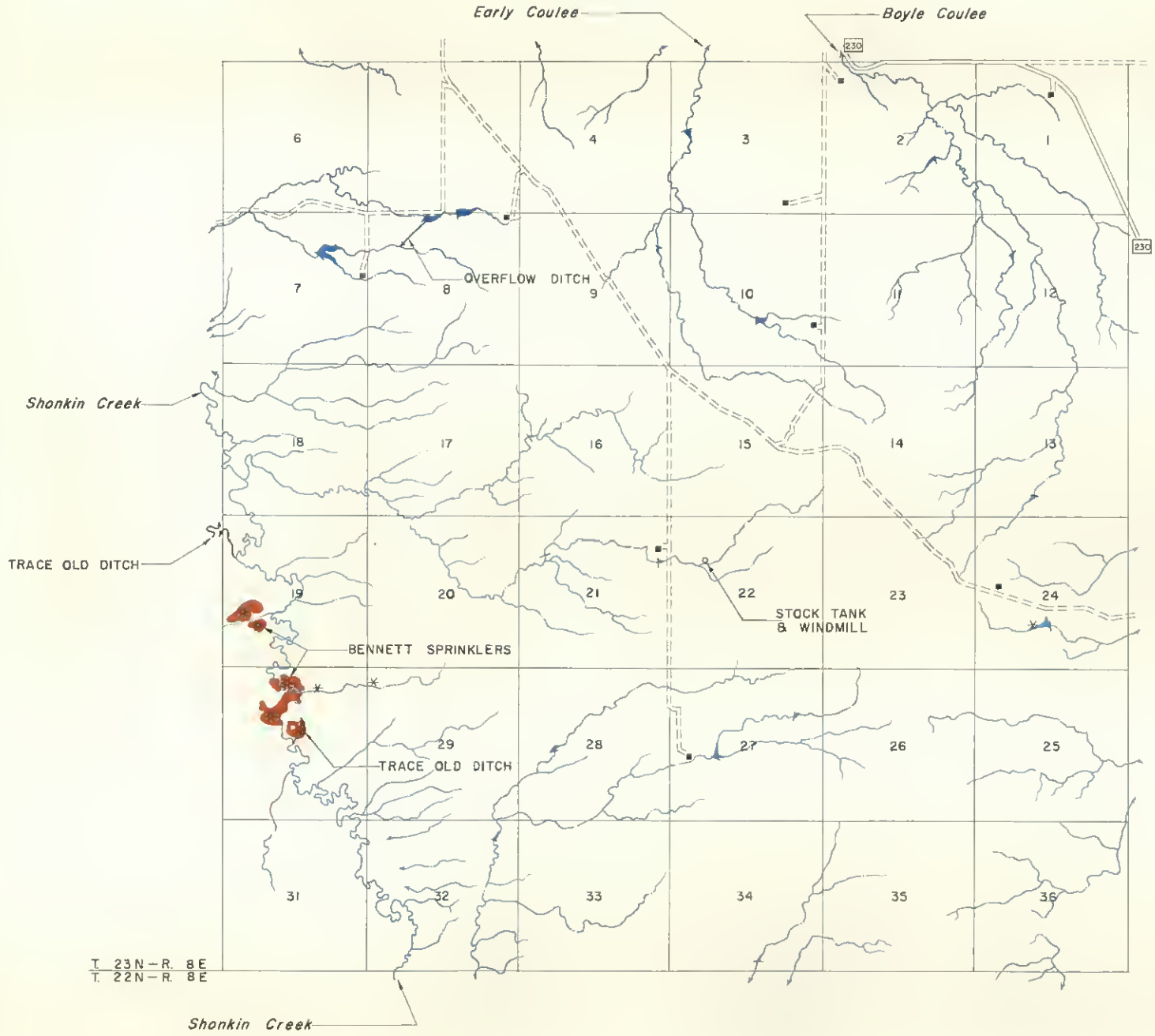

G. N. R. R.
CARTER
12 Mile Coulee
Bulls Head Coulee
Missouri River
CARTER FERRY
FATZ PUMP, SPRINKLER
FATZ PUMP, DITCH
JACOBSON PUMPS, SPRINKLER
MORROW PUMP, DITCH
LEWIS PUMP, DITCH
(NOT IN USE)
FLOWEREE
G. N. R. R.
T. 23N-R. 5E
T. 22N-R. 5E
CASCADE COUNTY
Big Coulee
Missouri River
LEGEND
Private Irrigation
Twp. 23 North
Rge. 6 East



Twp. 23 North

Rge. 7 East


6th STANDARD PARALLEL NORTH
LEGEND
Private Irrigation
Teton River
TRACE EMBLETON DITCH
SHAW DITCH
OLD CHANNEL
SHAW PUMP
Teton River
TRACE LOCKWOOD DITCH
REDANT PUMP, DITCHES
G. N. R. R.
CEMETERY UNDERGROUND PIPELINE
TRACE SWANBERG DITCH
FLOOD CONTROL DIKES
FORT BENTON
Missouri River
KING PUMP & DITCHES
CITY PUMPS
Rudolph Coulee
Shonkin Creek
DIEKHANS DITCH
G. N. R. R.
COOPER PUMP, SPRINKLERS
HARVEY WELL SPRINKLER
KING PUMP, DITCH
UHL PUMP, SPRINKLER
LEMKE SPRINKLER, WELL
TRACE OF DITCH
SCHOONOVER SPRINKLER, WELL
UHL PUMP, DITCH
SOUIRES PUMP, DITCHES
T. 24N - R. 7E
T. 23N - R. 7E
Wright Coulee
Coulee
Missouri River
MORROW PUMP, DITCHES
Bird
Shonkin Creek
Twp. 23 & 24 North
Rge. 8 East
14

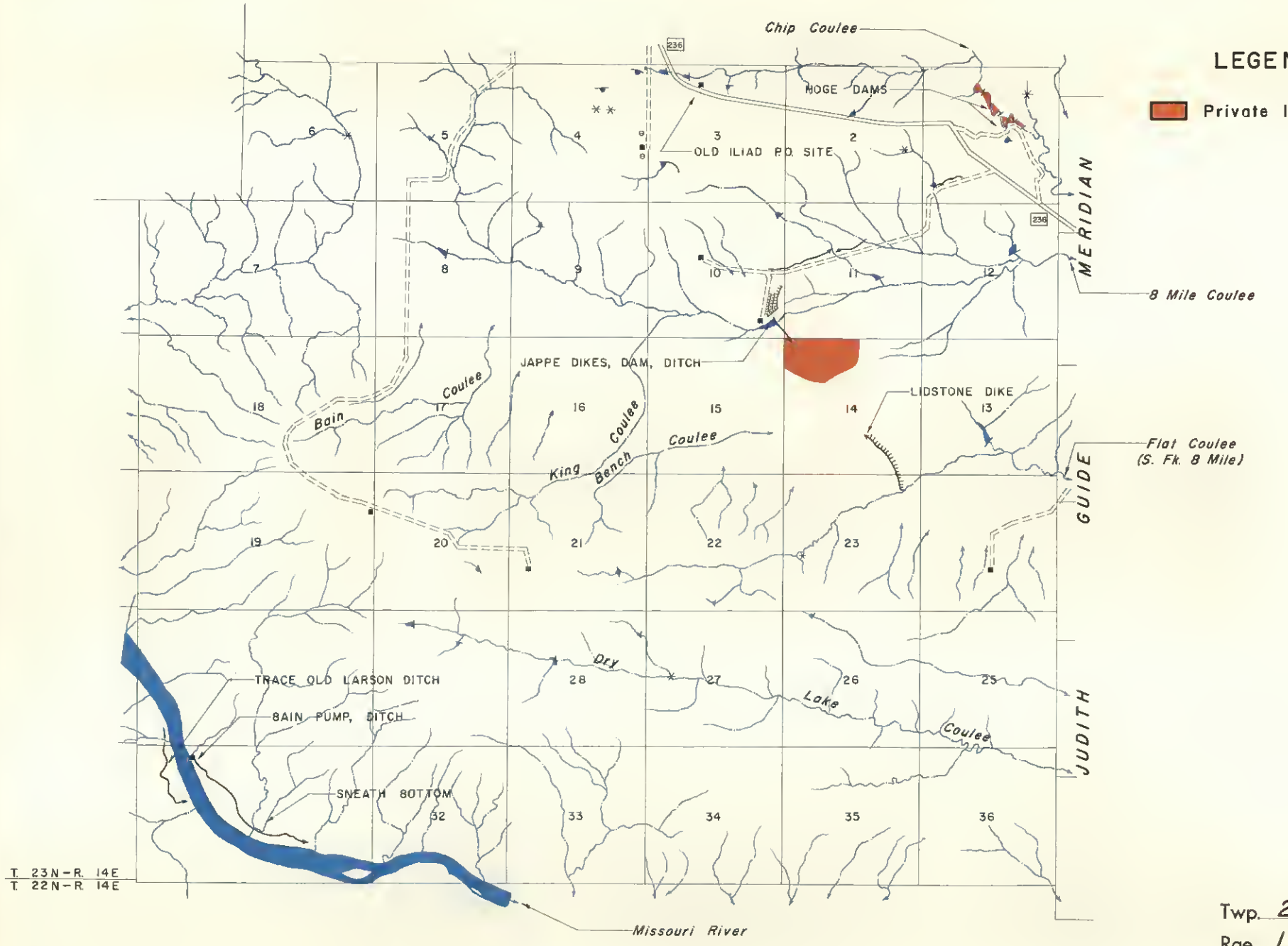


LEGEND

Private Irrigation

Twp. 23 North

Rge. 9 East

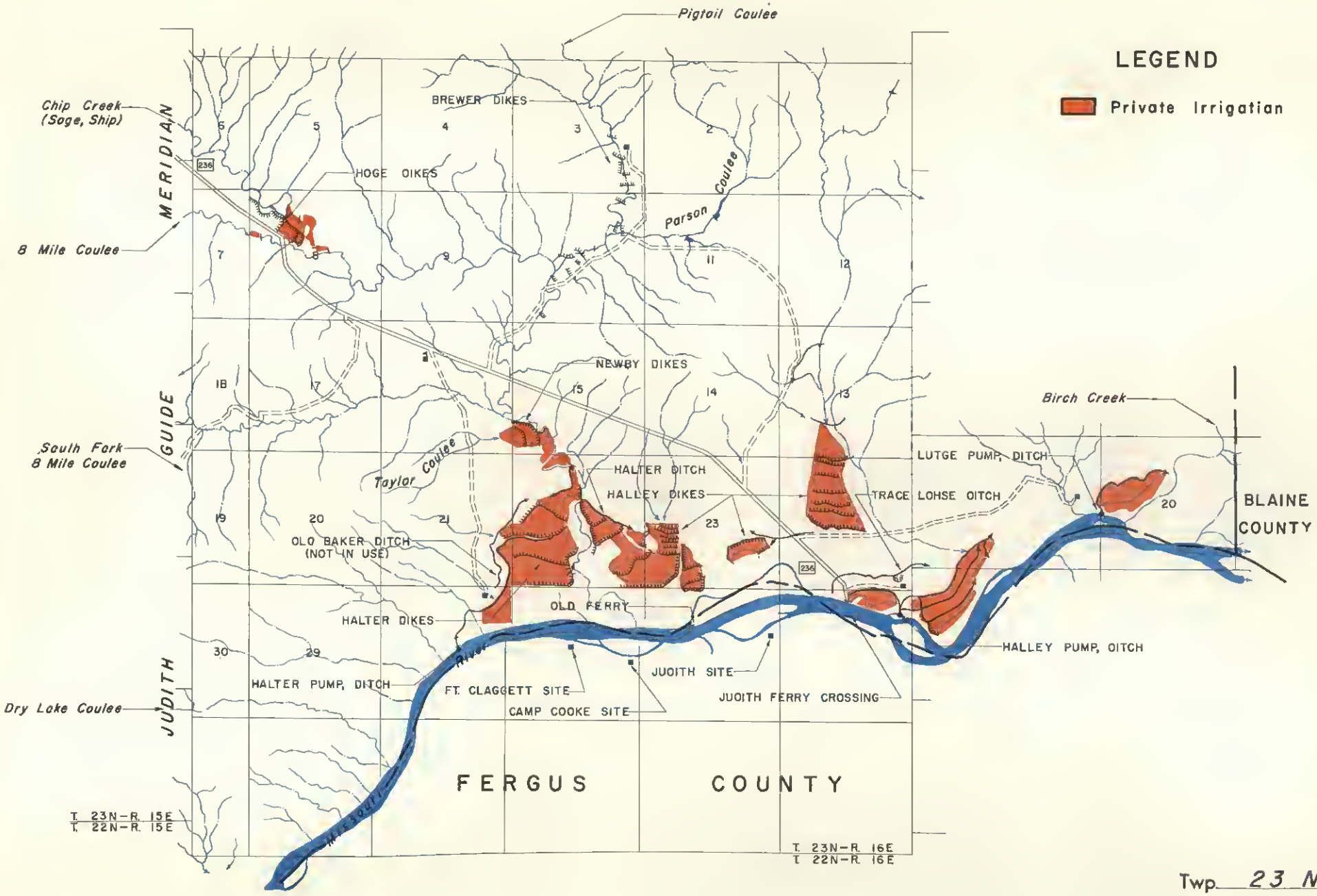


LEGEND

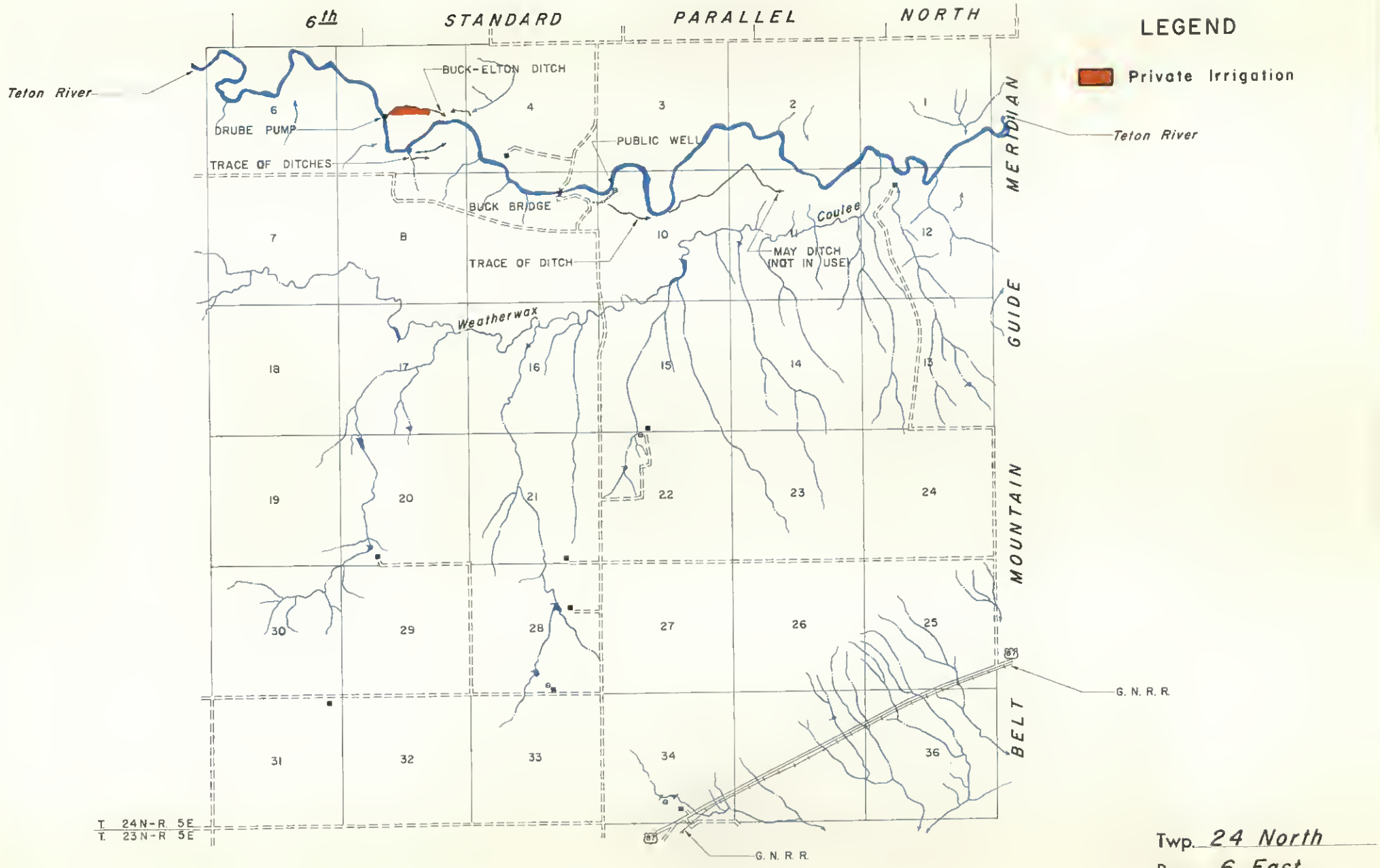
Private Irrigation

T. 23N-R. 14E
T. 22N-R. 14E

Twp. 23 North
Rge. 15 East

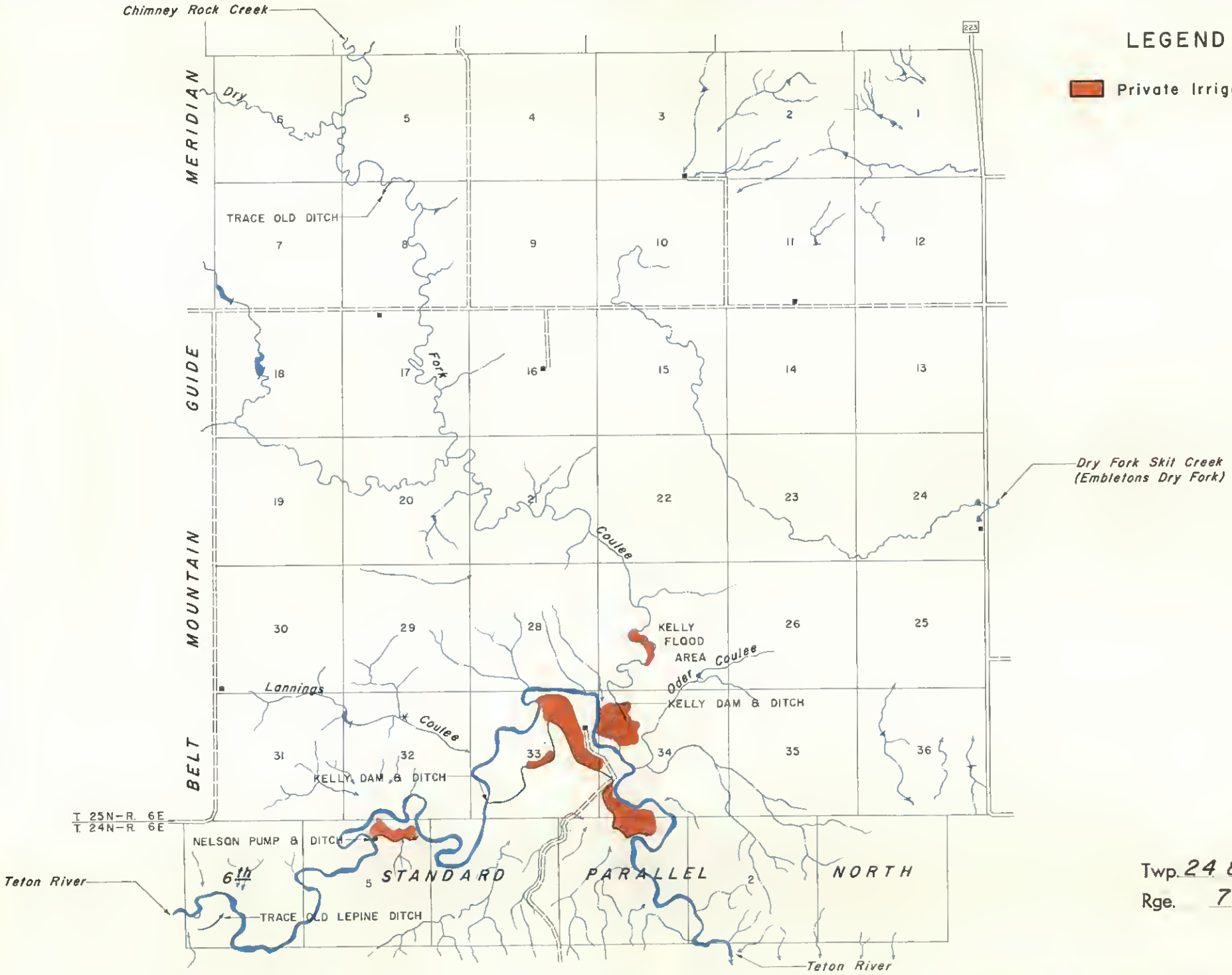


Twp. 23 North
Rge. 16 & 17 East



Twp. 24 North

Rge. 6 East

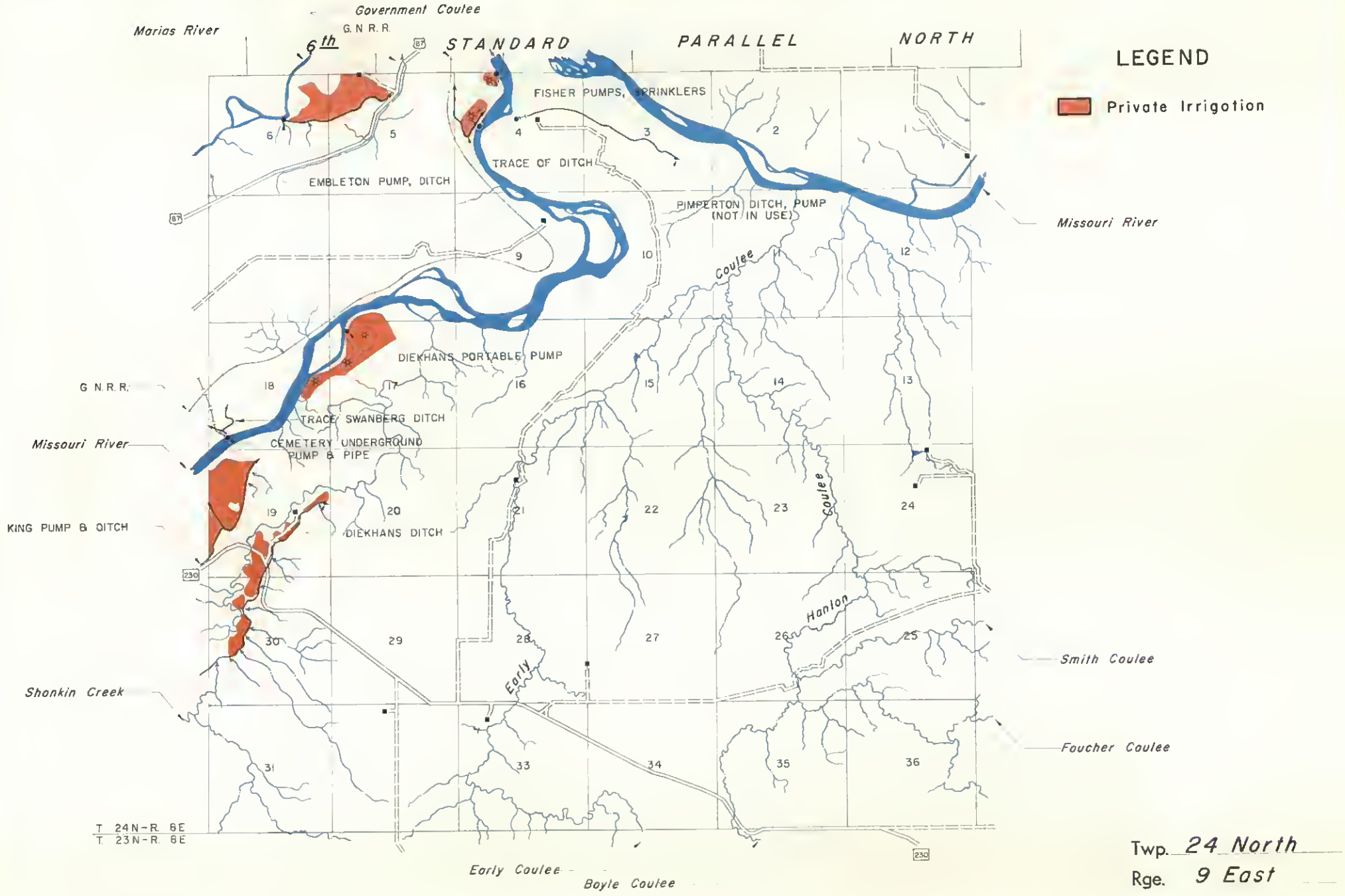


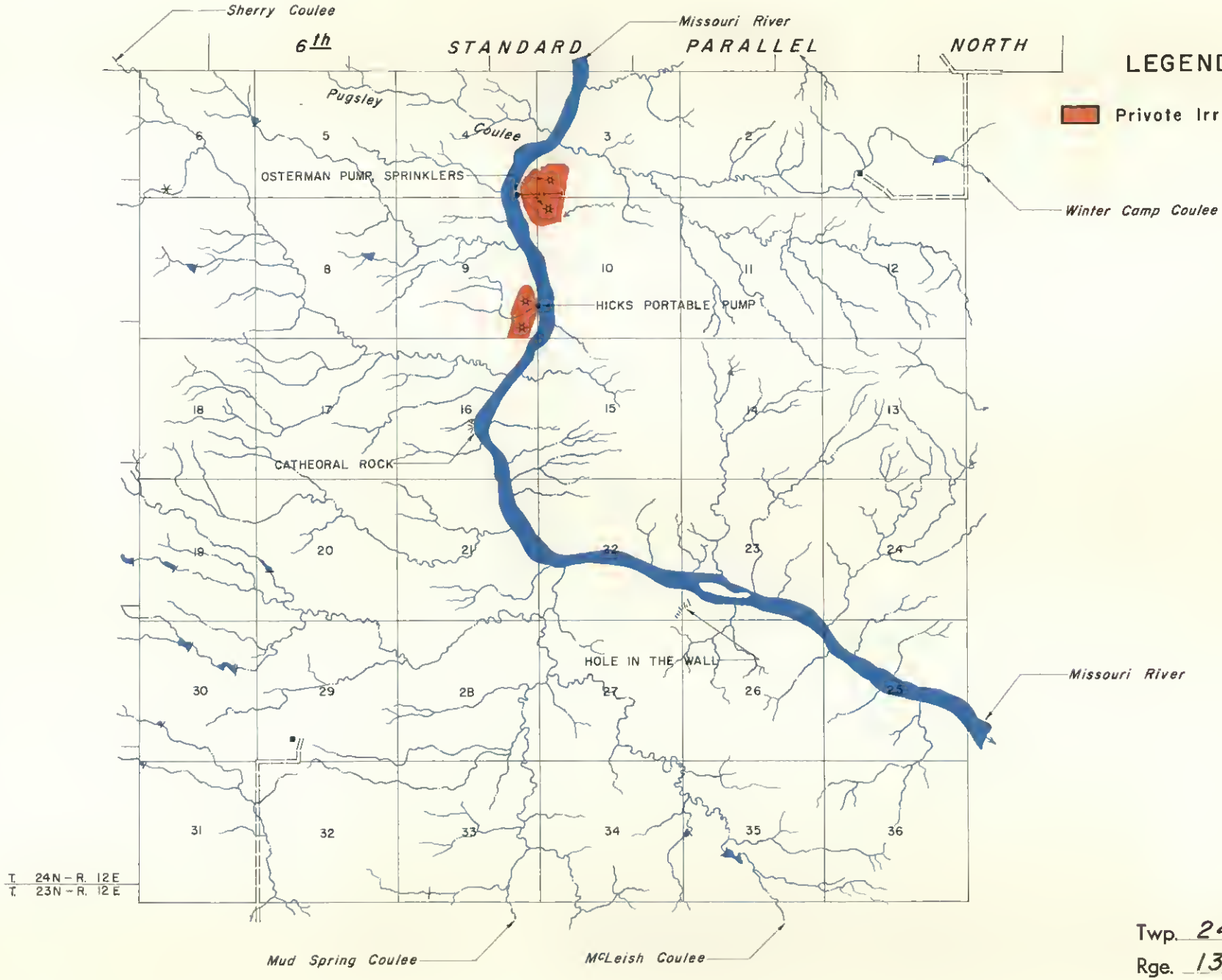
LEGEND

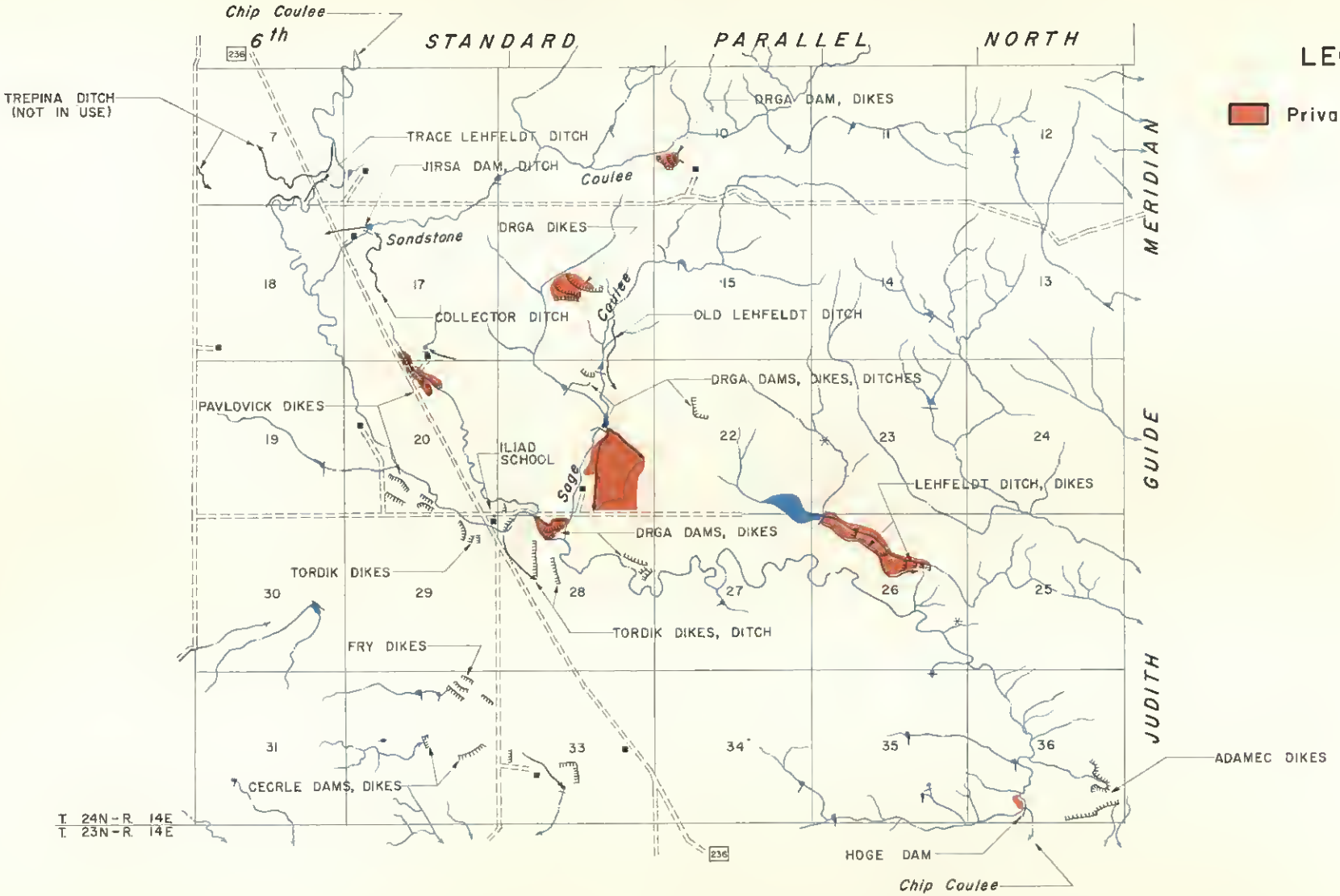
Private Irrigation

Twp. 24 & 25 North

Rge. 7 East


Government Coulee
Marias River
G. N. R. R.
6th
STANDARD
PARALLEL
NORTH
FISHER PUMPS, SPRINKLERS
TRACE OF DITCH
EMBLETON PUMP, DITCH
PIMPERTON DITCH, PUMP (NOT IN USE)
Missouri River
Coulee
DIEKHANS PORTABLE PUMP
G. N. R. R.
TRACE SWANBERG DITCH
CEMETERY UNDERGROUND PUMP & PIPE
Missouri River
KING PUMP & DITCH
DIEKHANS DITCH
Coulee
Hanlon
Smith Coulee
Early
Shonkin Creek
Foucher Coulee
T. 24N-R. 8E
T. 23N-R. 8E
Early Coulee
Boyle Coulee
LEGEND
Private Irrigation
Twp. 24 North
Rge. 9 East


Sherry Coulee
6th STANDARD PARALLEL NORTH
Missouri River
LEGEND
Privote Irrigation
Pugsley Coulee
OSTERMAN PUMP, SPRINKLERS
Winter Camp Coulee
HICKS PORTABLE PUMP
CATHEORAL ROCK
HOLE IN THE WALL
Missouri River
T. 24N - R. 12E
T. 23N - R. 12E
Mud Spring Coulee
McLeish Coulee
Twp. 24 North
Rge. 13 East

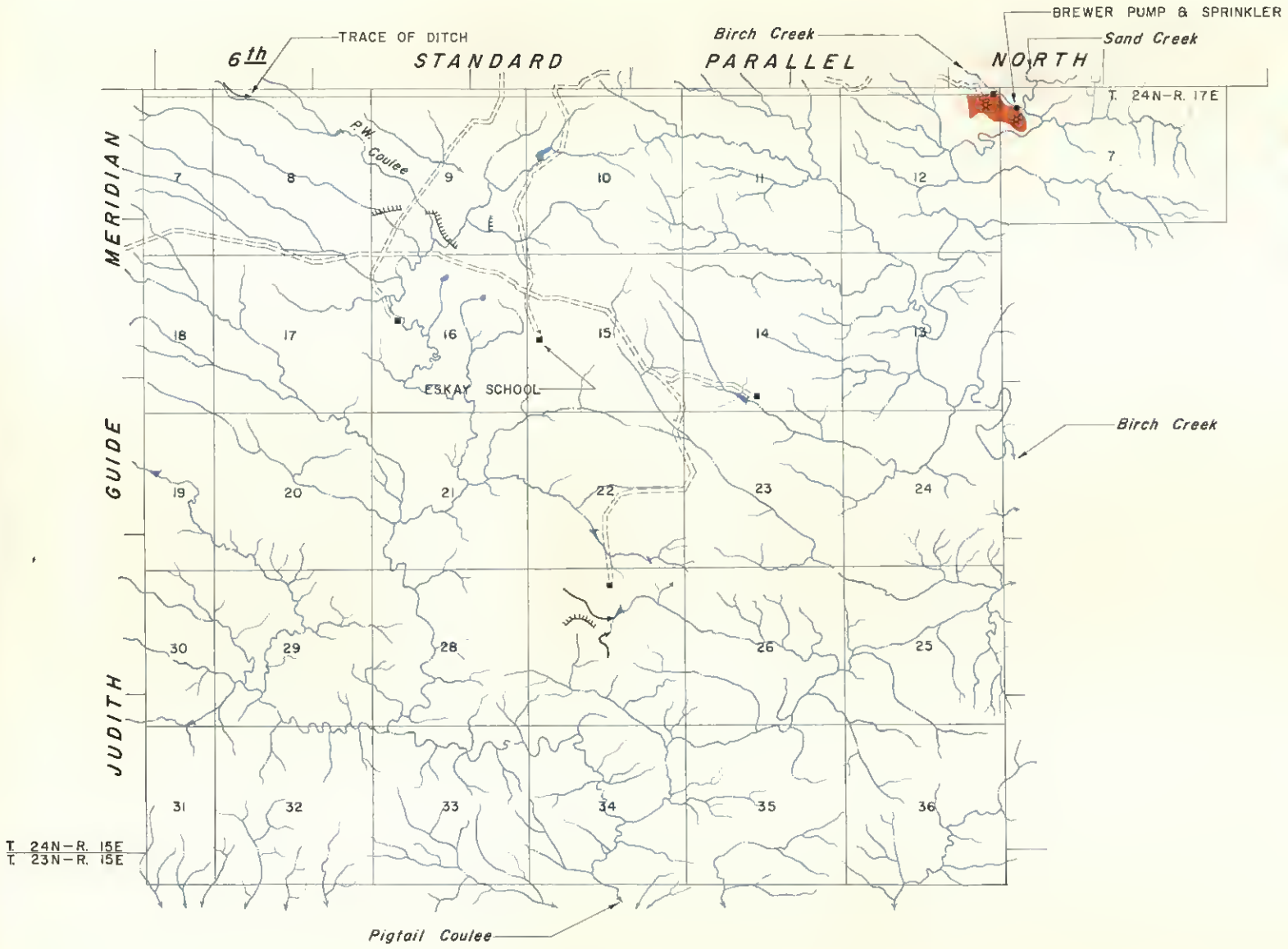


LEGEND

Private Irrigation

Twp. 24 North

Rge. 15 East



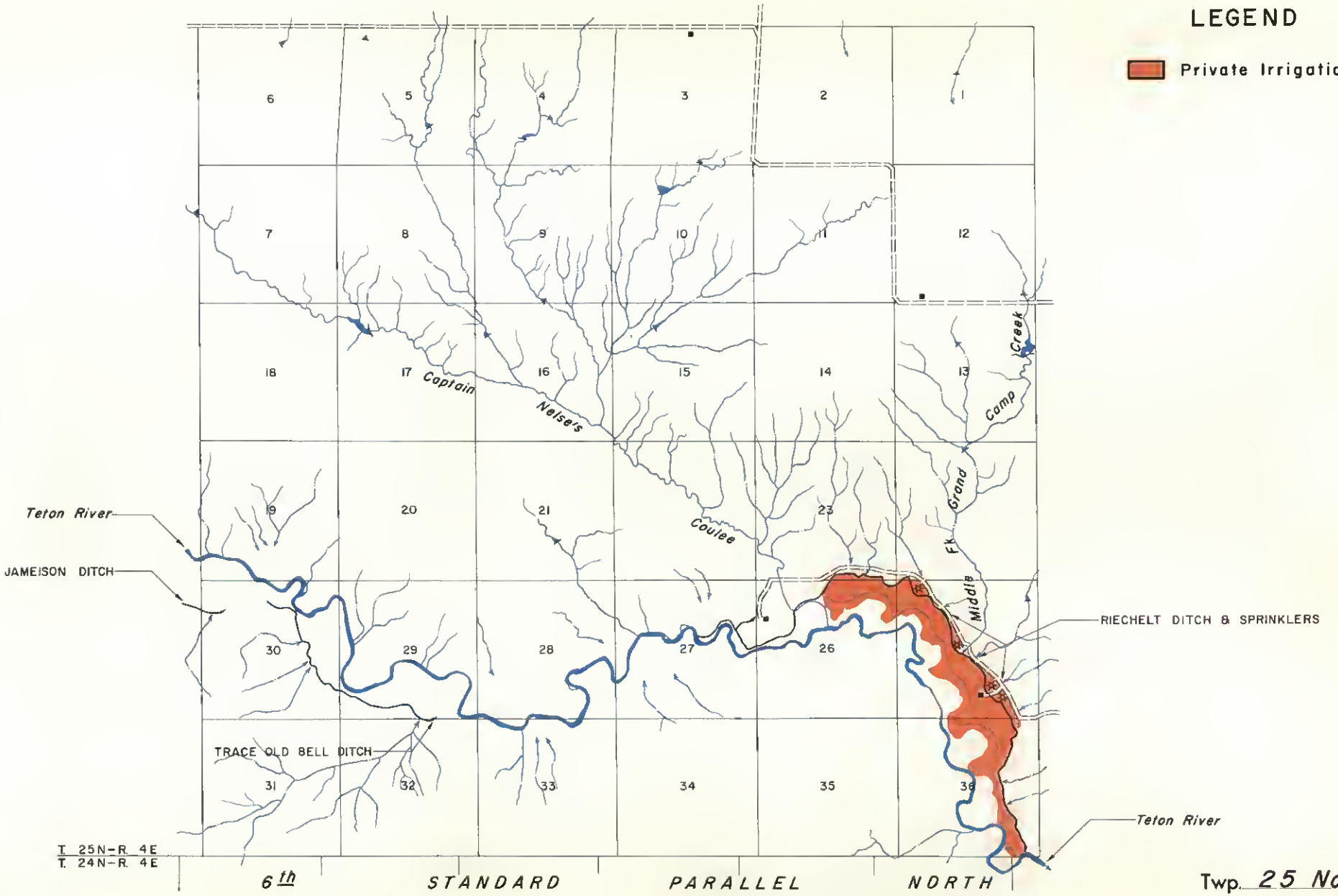
LEGEND

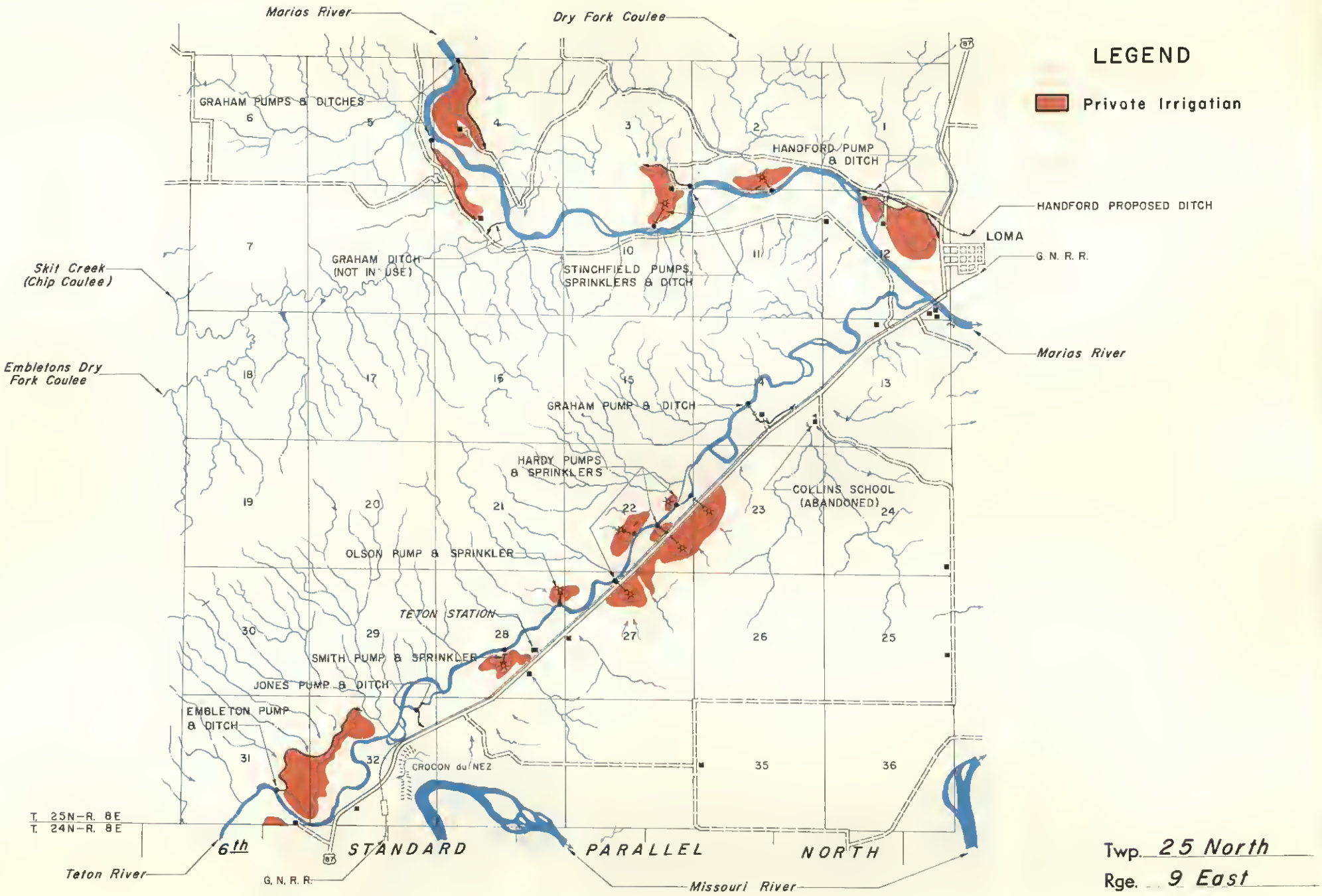
Private Irrigation

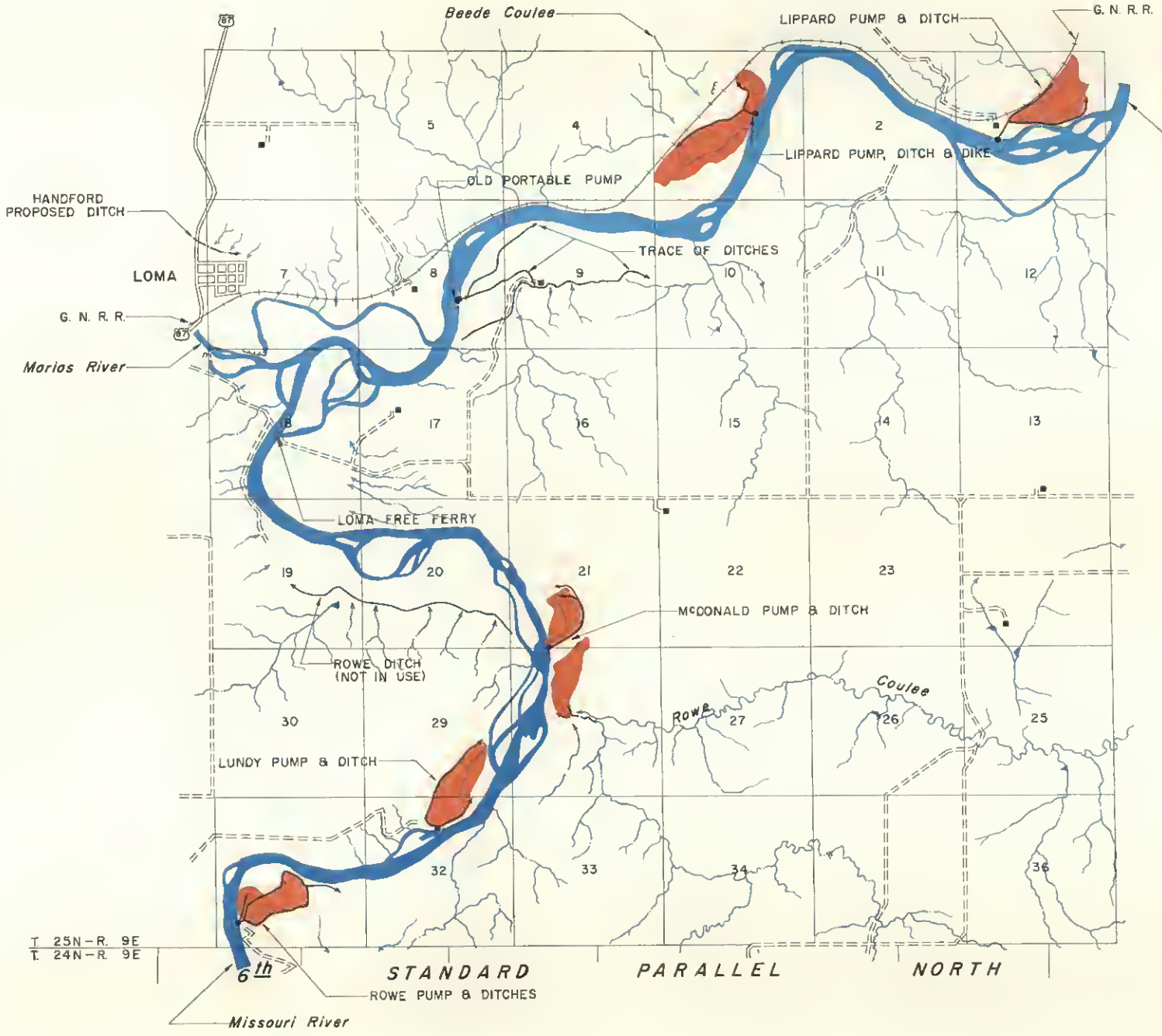
Twp. 24 North
Rge. 16 & 17 East

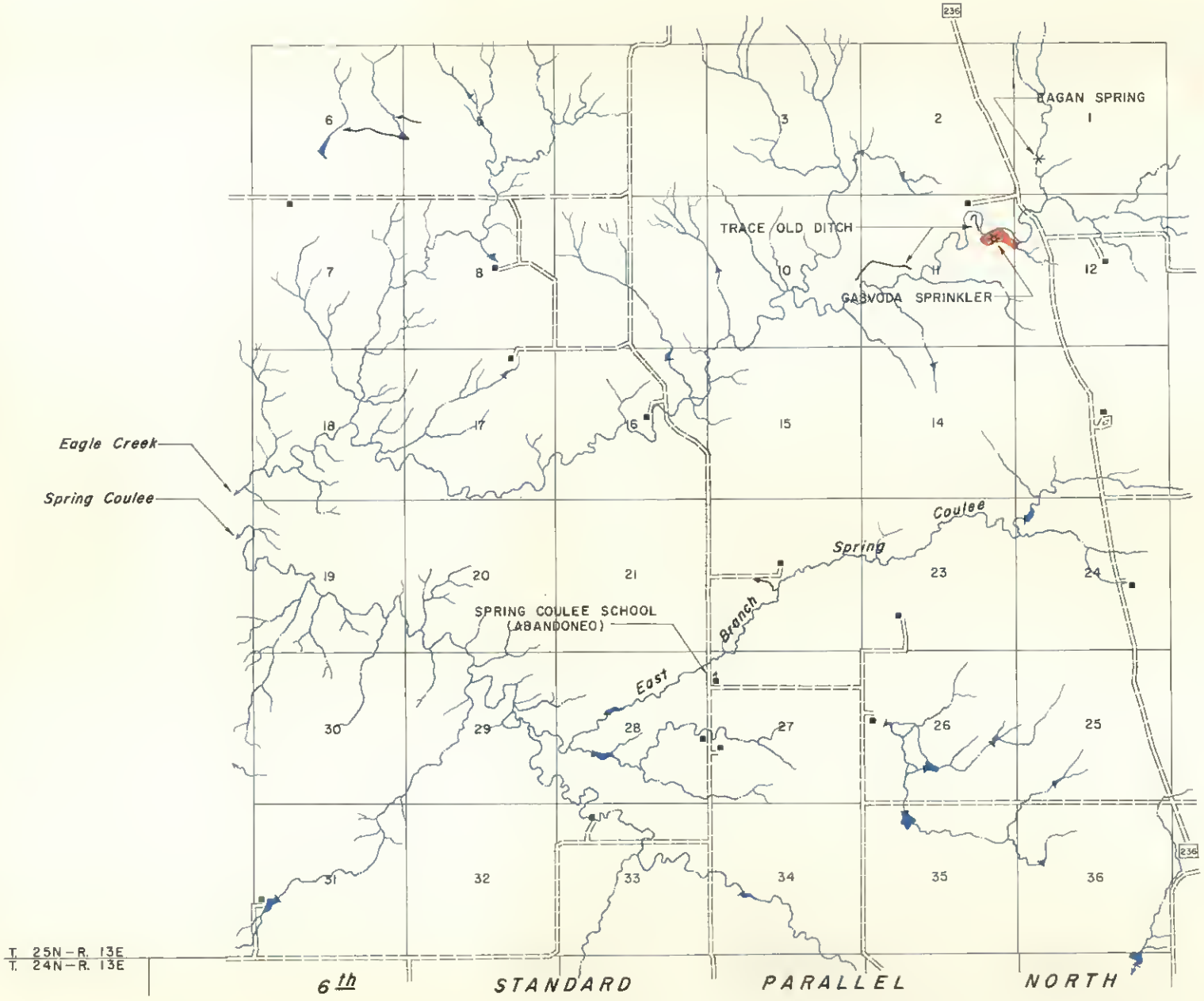
Twp. 25 North

Rge. 4 East


LEGEND
Private Irrigation
6
5
4
3
2
1
7
8
9
10
11
12
18
17
16
15
14
13
Captain Nelse's Coulee
Camp Creek
Grond Fk Middle
Teton River
JAMEISON DITCH
19
20
21
23
30
29
28
27
26
RIECHELT DITCH & SPRINKLERS
TRACE OLD BELL DITCH
31
32
33
34
35
36
Teton River
T. 25N-R. 4E
T. 24N-R. 4E
6th STANDARD PARALLEL NORTH
Twp. 25 North
Rge. 5 East


Marias River
Dry Fork Coulee
GRAHAM PUMPS & DITCHES
HANDFORD PUMP & DITCH
HANDFORD PROPOSED DITCH
LOMA
G. N. R. R.
Skit Creek (Chip Coulee)
GRAHAM DITCH (NOT IN USE)
STINCHFIELD PUMPS SPRINKLERS & DITCH
Marias River
Embletons Dry Fork Coulee
GRAHAM PUMP & DITCH
HARDY PUMPS & SPRINKLERS
COLLINS SCHOOL (ABANDONED)
OLSON PUMP & SPRINKLER
TETON STATION
SMITH PUMP & SPRINKLER
JONES PUMP & DITCH
EMBLETON PUMP & DITCH
CROCON du NEZ
T. 25N-R. 8E
T. 24N-R. 8E
6th STANDARD PARALLEL NORTH
Teton River
G. N. R. R.
Missouri River
LEGEND
Private Irrigation
Twp. 25 North
Rge. 9 East


Beede Coulee
LIPPARD PUMP & DITCH
G. N. R. R.
LEGEND
Private Irrigation
Missouri River
LIPPARD PUMP, DITCH & DIKE
OLD PORTABLE PUMP
HANDFORD PROPOSED DITCH
TRACE OF DITCHES
LOMA
G. N. R. R.
Marias River
LOMA FREE FERRY
McDONALD PUMP & DITCH
ROWE DITCH (NOT IN USE)
Rowe Coulee
LUNDY PUMP & DITCH
T. 25N - R. 9E
T. 24N - R. 9E
6th STANDARD PARALLEL NORTH
ROWE PUMP & DITCHES
Missouri River
Twp. 25 North
Rge. 10 East

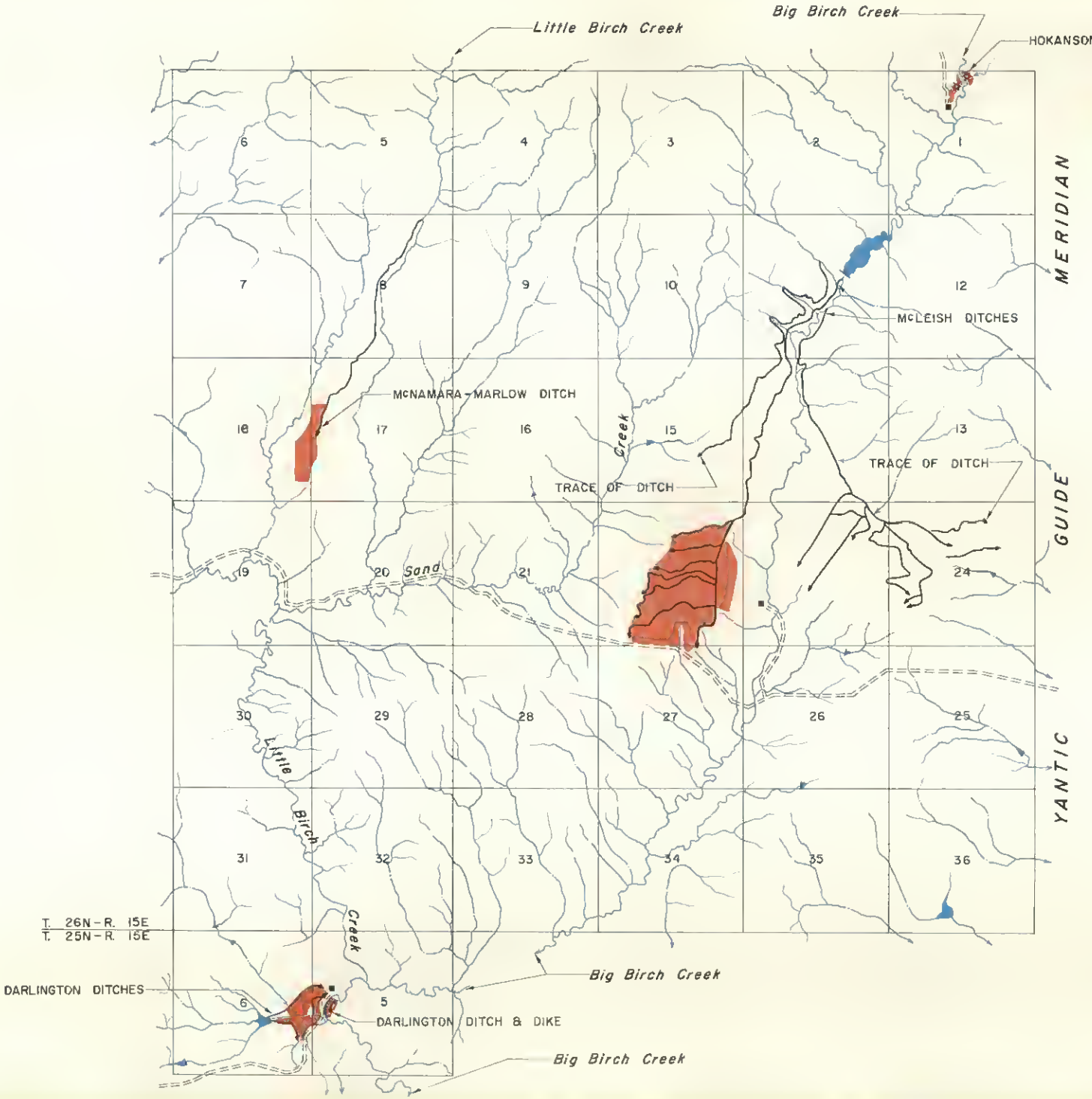


LEGEND

Private Irrigation

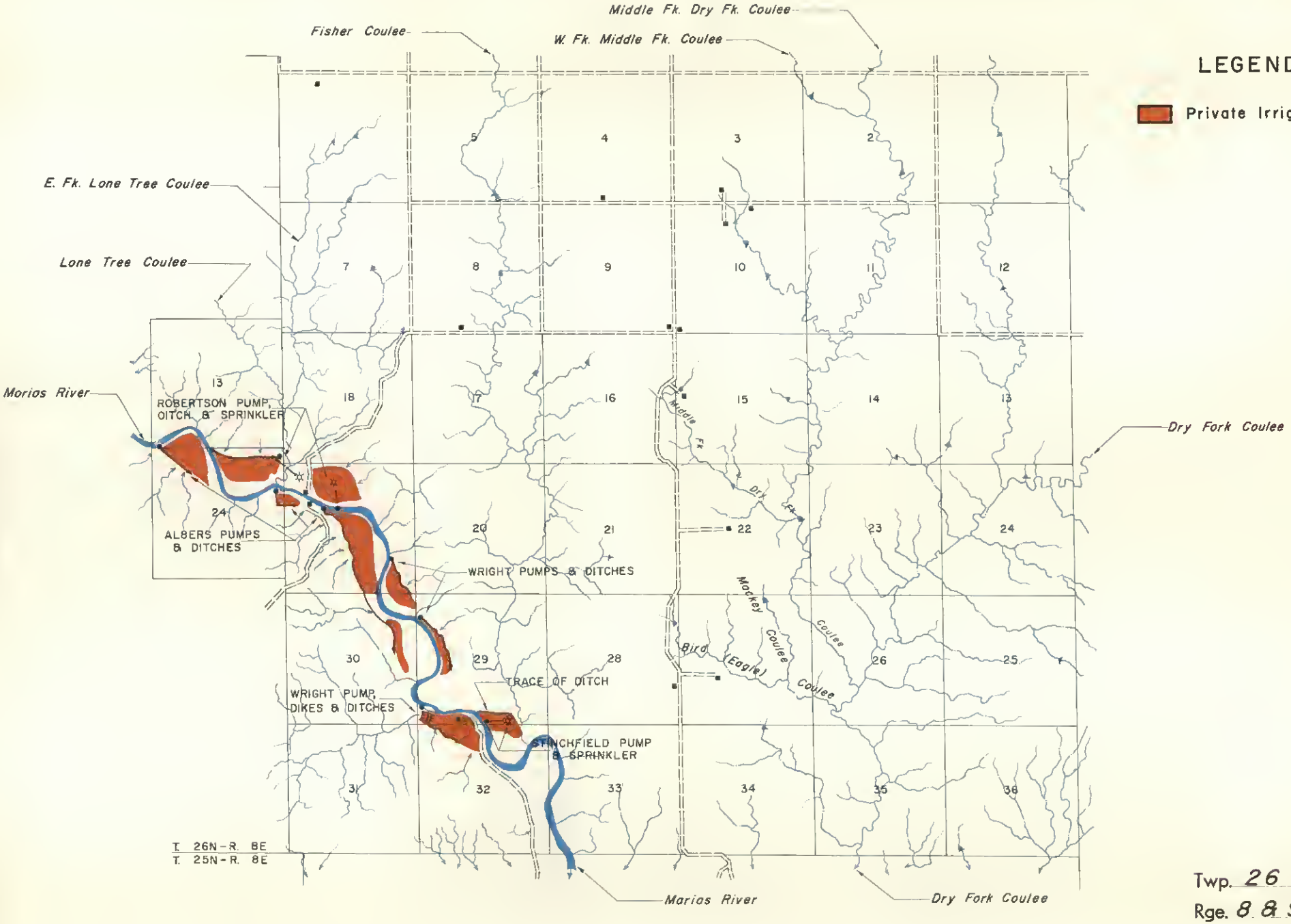
Twp. 25 North

Rge. 14 East

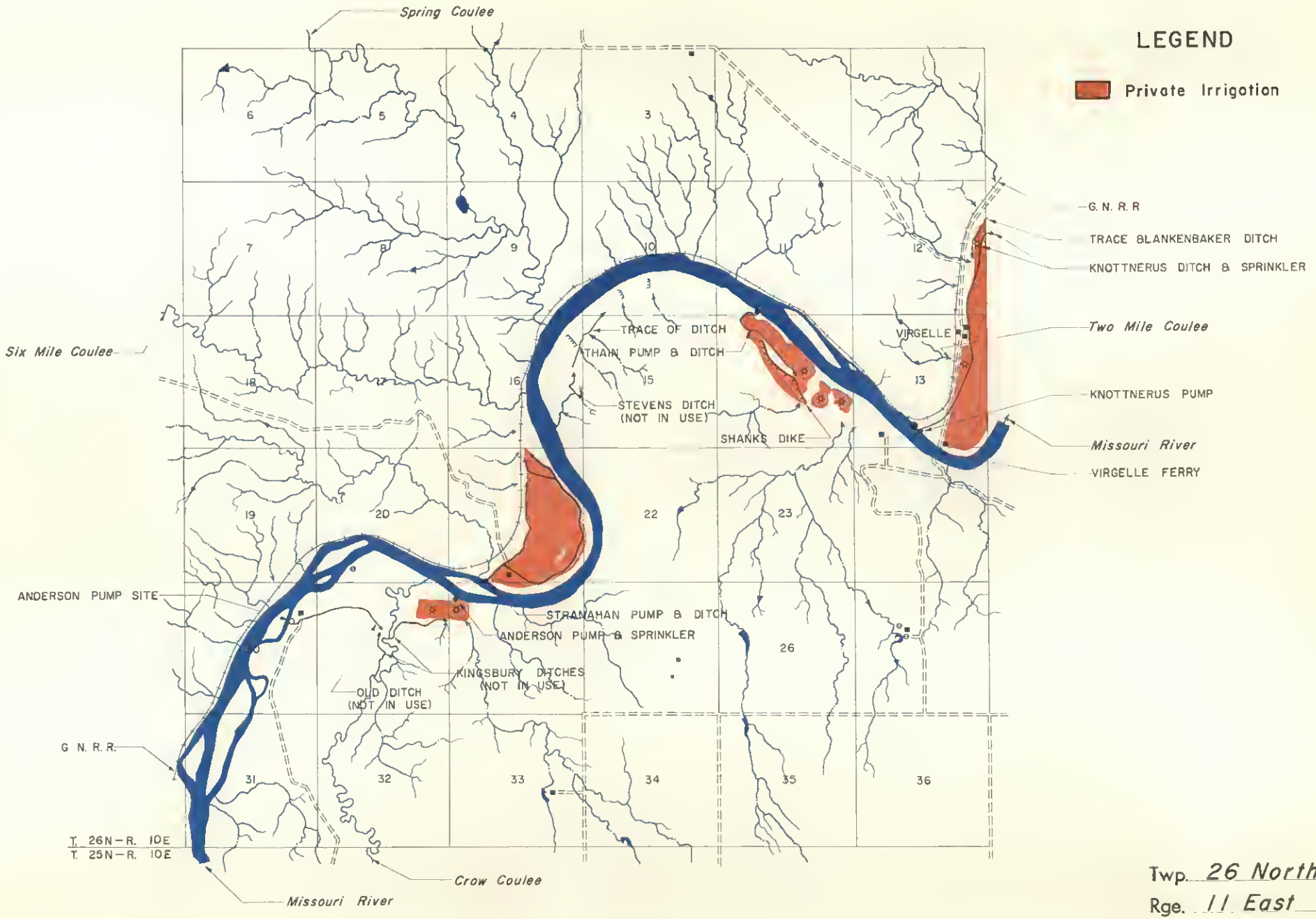


Twp. 25 & 26 North

Rge. 16 East

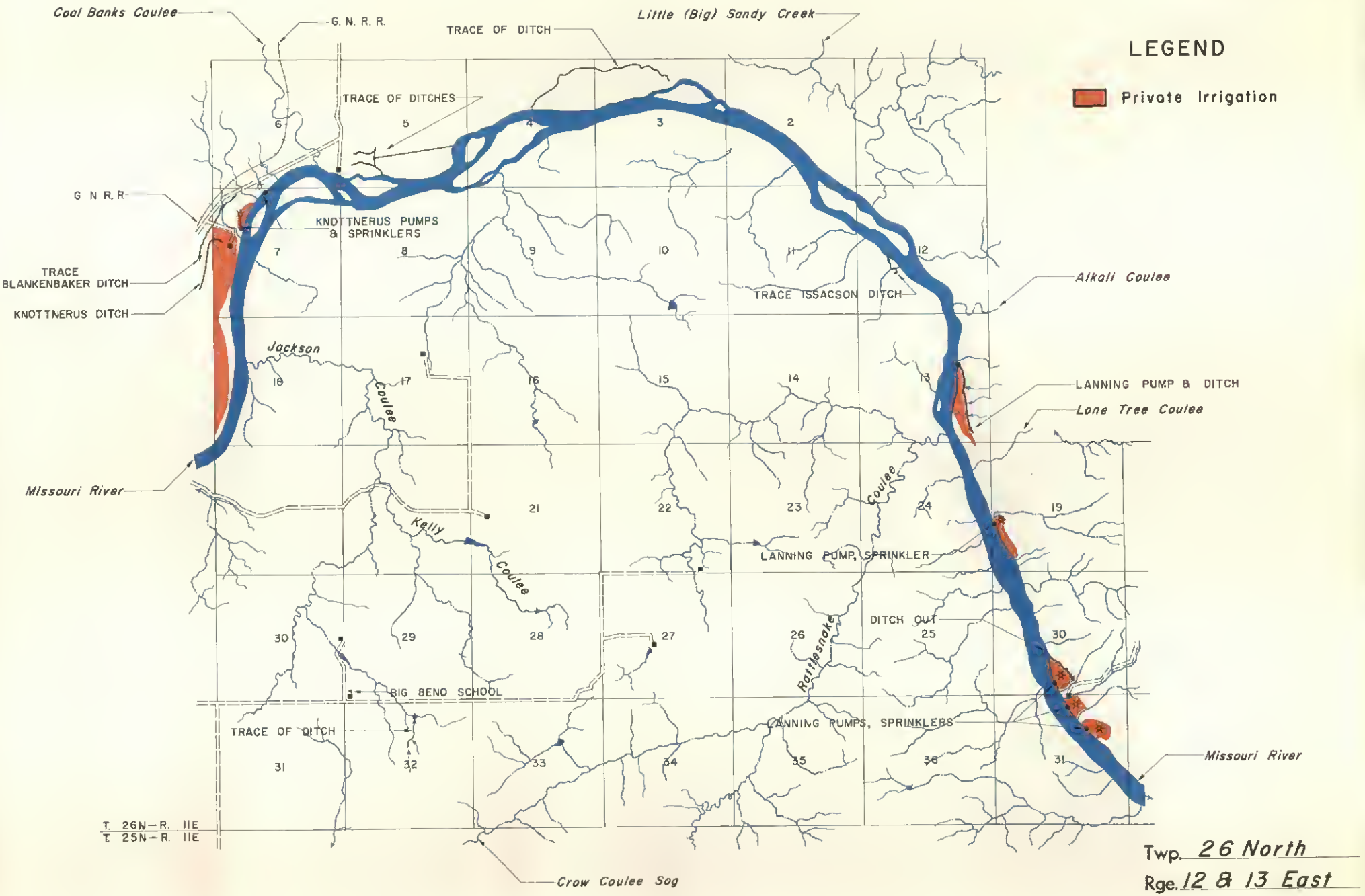


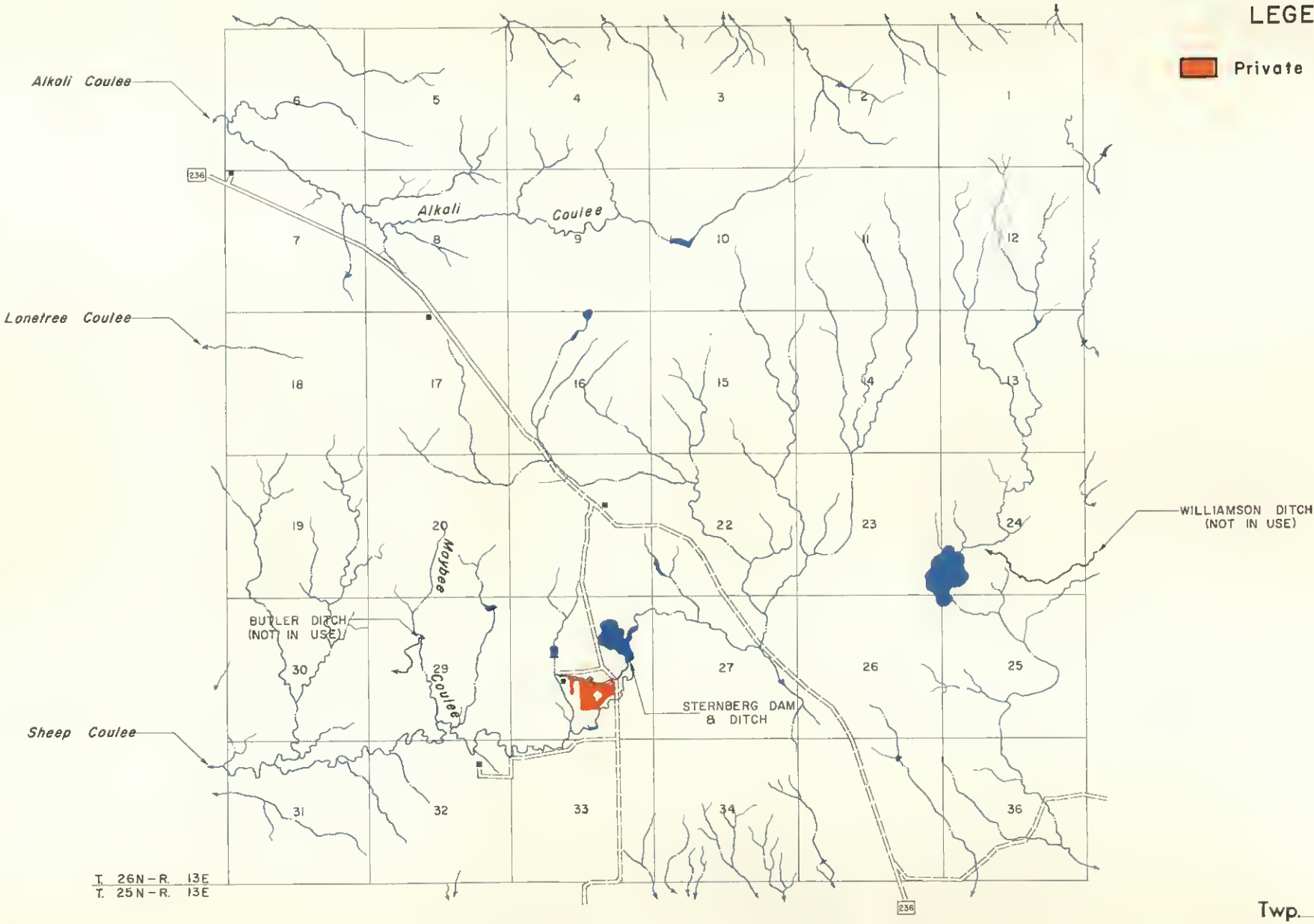
Twp. 26 North
Rge. 8 & 9 East



Twp. 26 North

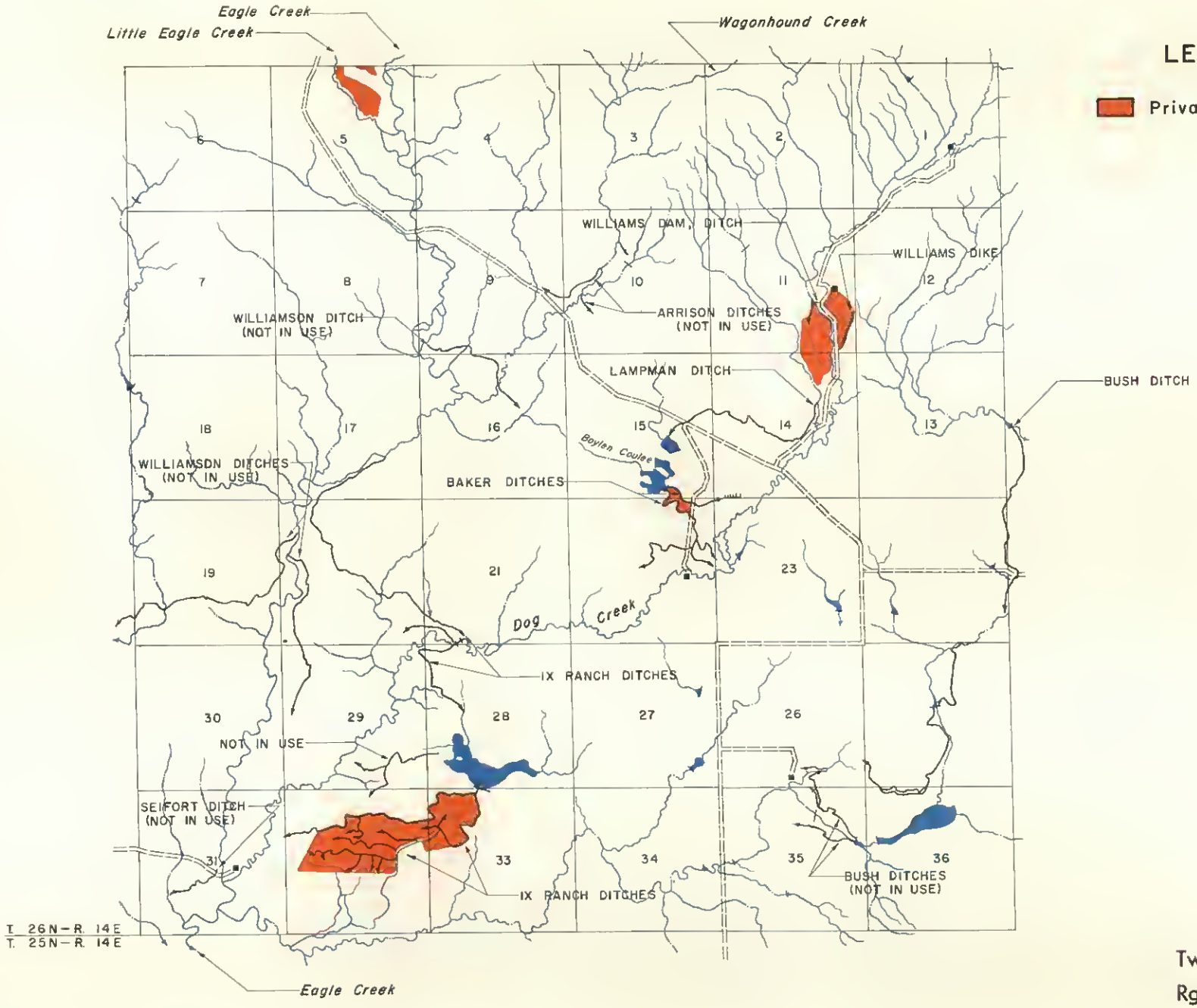
Rge. 11 East


Coal Banks Coulee
G. N. R. R.
TRACE OF DITCH
Little (Big) Sandy Creek
TRACE OF DITCHES
G N R.R
KNOTTNERUS PUMPS & SPRINKLERS
TRACE BLANKENBAKER DITCH
KNOTTNERUS DITCH
TRACE ISSACSON DITCH
Alkali Coulee
Jackson Coulee
LANNING PUMP & DITCH
Lone Tree Coulee
Missouri River
Kelly Coulee
LANNING PUMP, SPRINKLER
Rattlesnake Coulee
DITCH OUT
BIG BEND SCHOOL
TRACE OF DITCH
LANNING PUMPS, SPRINKLERS
Missouri River
T. 26N—R. 11E
T. 25N—R. 11E
Crow Coulee Sog
LEGEND
Private Irrigation
Twp. 26 North
Rge. 12 & 13 East



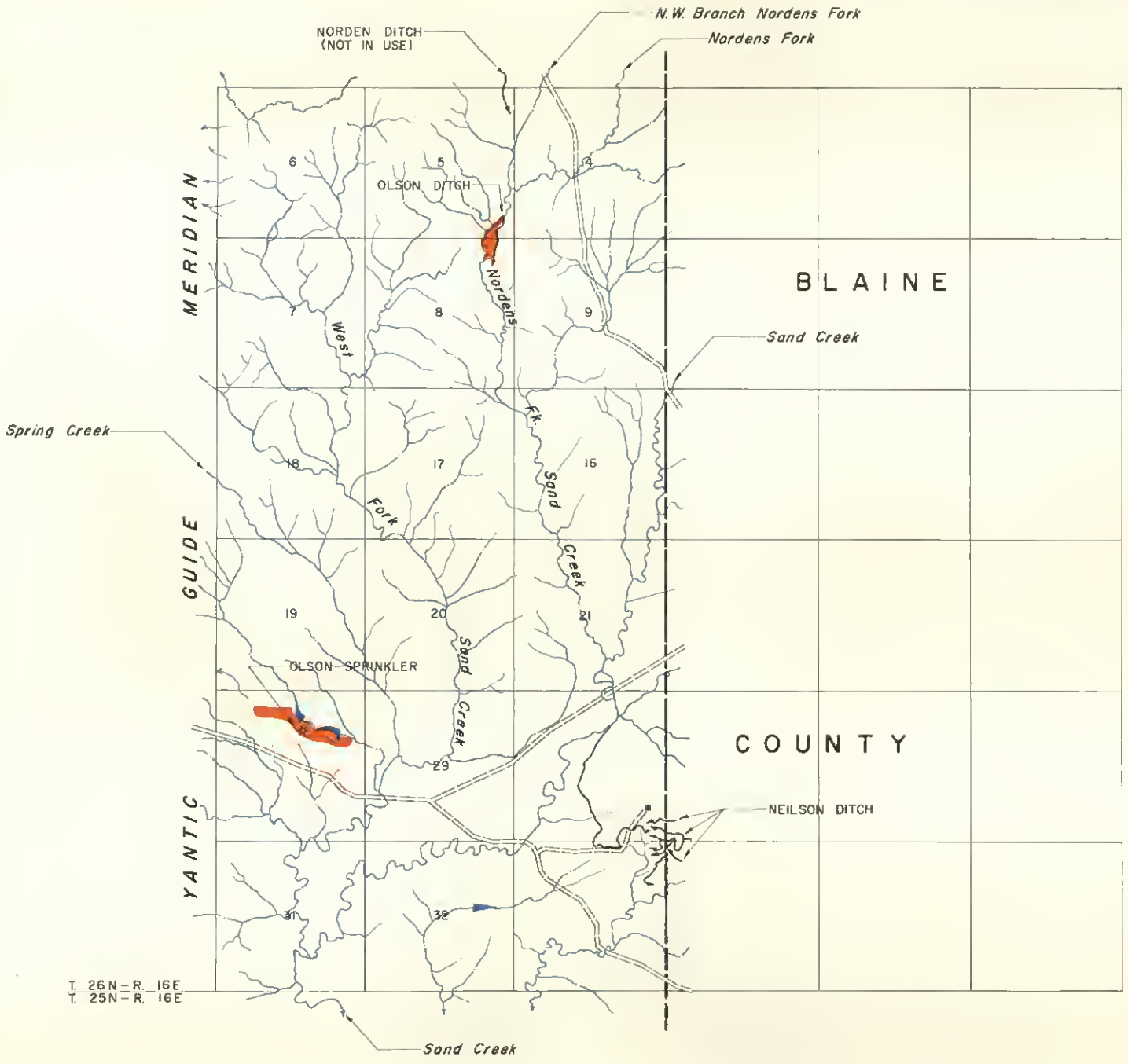
Twp. 26 North

Rge. 14 East



Twp. 26 North

Rge. 15 East

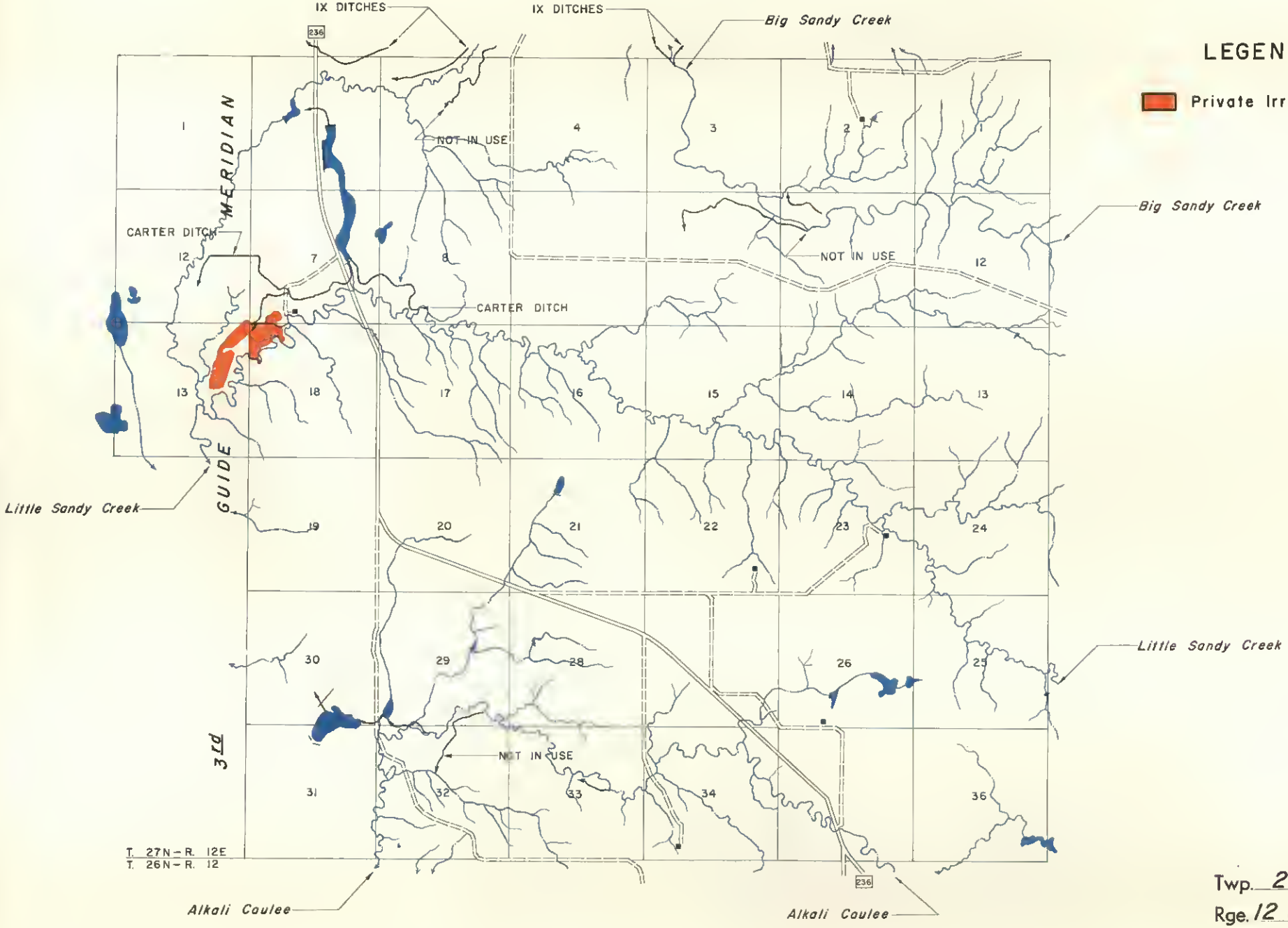


LEGEND

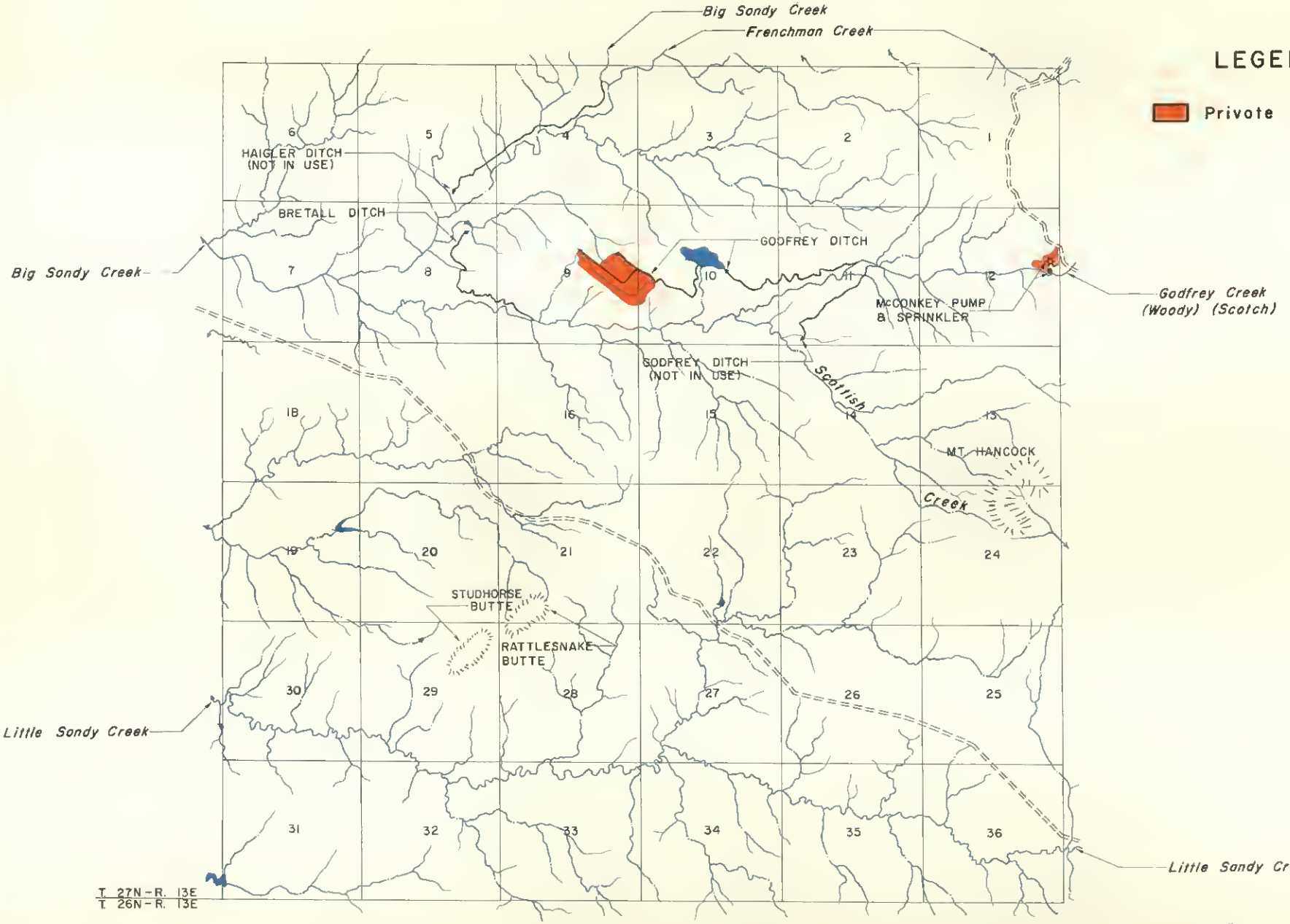
Private Irrigation

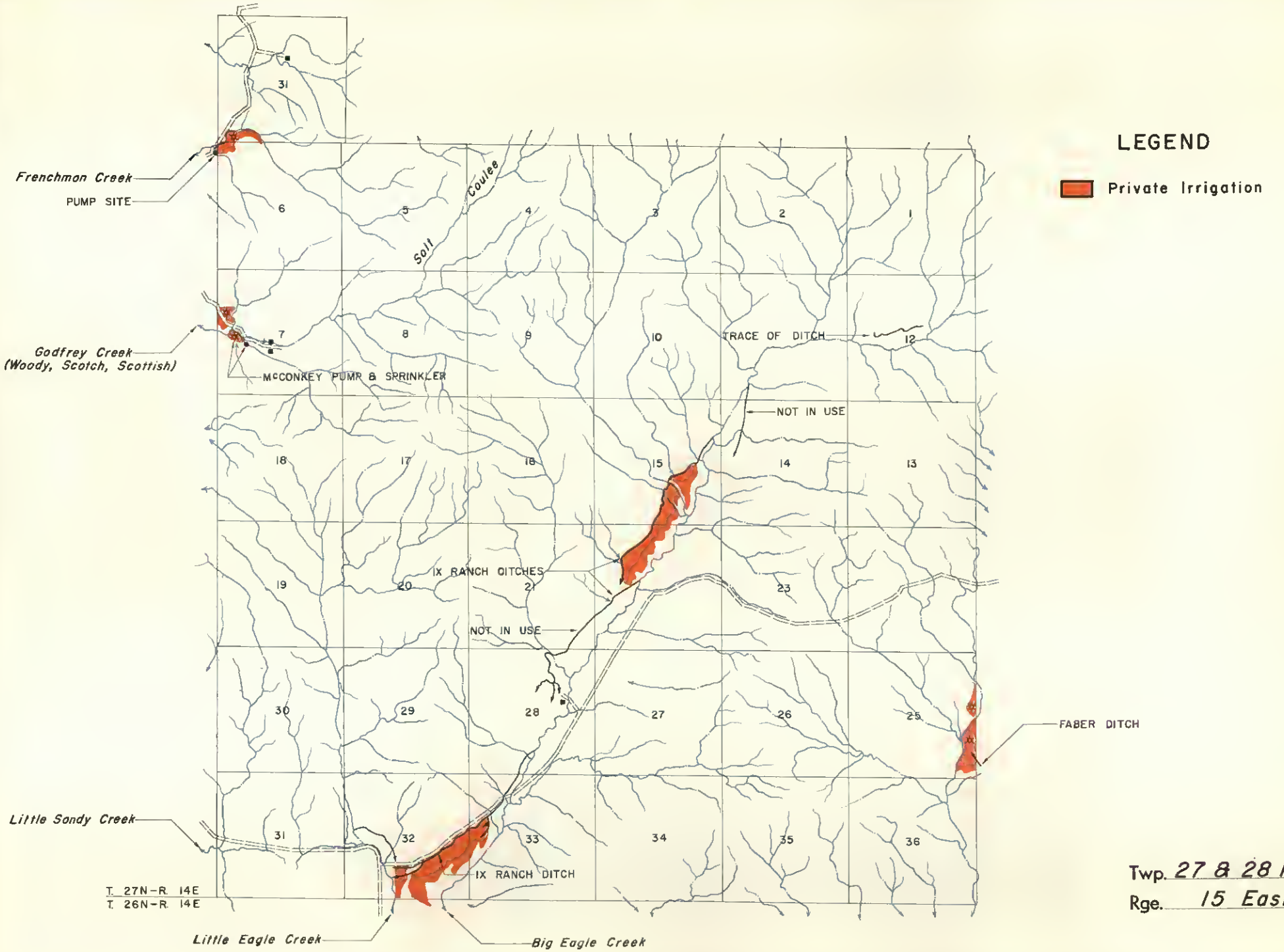
Twp. 26 North

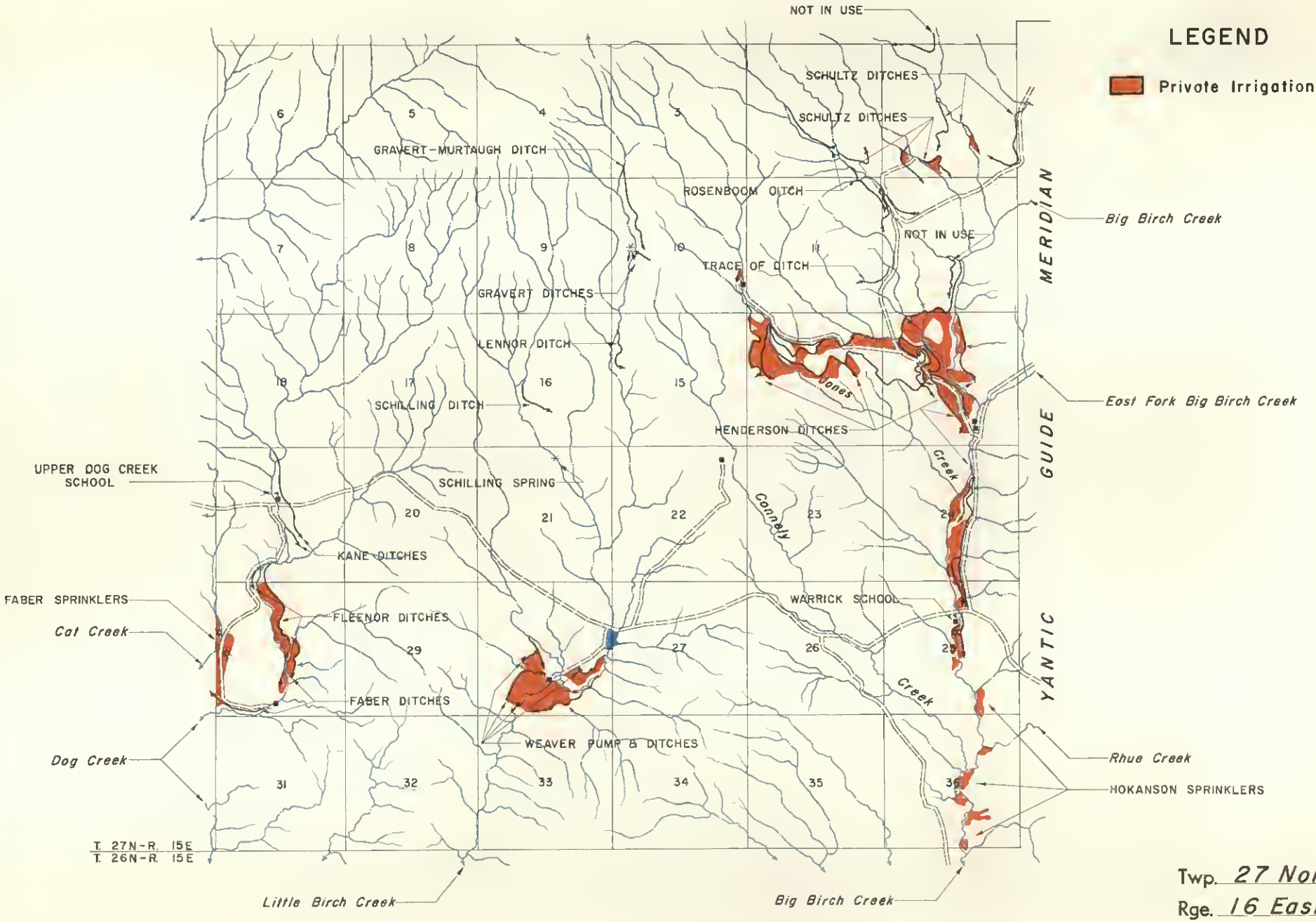
Rge. 17 East

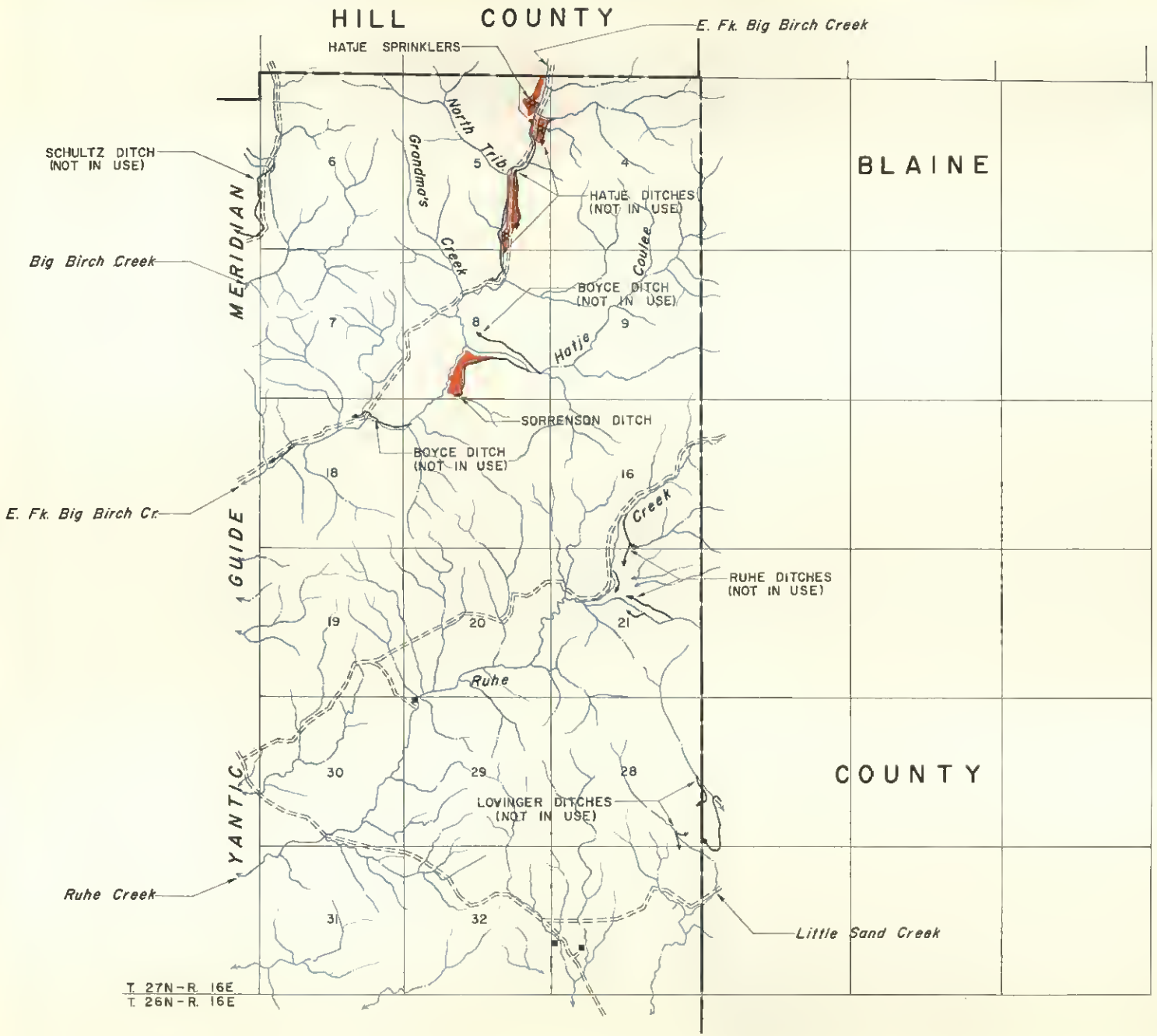


Twp. 27 North
Rge. 12 & 13 East


Big Sondy Creek
Frenchman Creek
HAIGLER DITCH (NOT IN USE)
BRETALL DITCH
GODFREY DITCH
Big Sondy Creek
Godfrey Creek (Woody) (Scotch)
McCONKEY PUMP & SPRINKLER
GODFREY DITCH (NOT IN USE)
Scottish
MT. HANCOCK
Creek
STUDHORSE BUTTE
RATTLESNAKE BUTTE
Little Sondy Creek
Little Sondy Creek
T. 27N - R. 13E
T. 26N - R. 13E
LEGEND
Privote Irrigotion
Twp. 27 North
Rge. 14 East


LEGEND
Private Irrigation
Frenchmon Creek
PUMP SITE
Godfrey Creek
(Woody, Scotch, Scottish)
McCONKEY PUMP & SPRINKLER
Salt Coulee
TRACE OF DITCH
NOT IN USE
IX RANCH DITCHES
NOT IN USE
FABER DITCH
Little Sandy Creek
IX RANCH DITCH
T. 27N-R. 14E
T. 26N-R. 14E
Little Eagle Creek
Big Eagle Creek
Twp. 27 & 28 North
Rge. 15 East


NOT IN USE
SCHULTZ DITCHES
SCHULTZ DITCHES
GRAVERT-MURTAUGH DITCH
ROSENBOOM DITCH
NOT IN USE
TRACE OF DITCH
GRAVERT DITCHES
LENNOR DITCH
SCHILLING DITCH
HENDERSON DITCHES
SCHILLING SPRING
KANE DITCHES
FLEENOR DITCHES
FABER DITCHES
WEAVER PUMP & DITCHES
WARRICK SCHOOL
UPPER DOG CREEK SCHOOL
FABER SPRINKLERS
Cat Creek
Dog Creek
Jones
Connely
Creek
Creek
Big Birch Creek
East Fork Big Birch Creek
Rhue Creek
HOKANSON SPRINKLERS
MERIDIAN
GUIDE
YANTIC
T. 27N-R. 15E
T. 26N-R. 15E
Little Birch Creek
Big Birch Creek
LEGEND
Private Irrigation
Twp. 27 North
Rge. 16 East

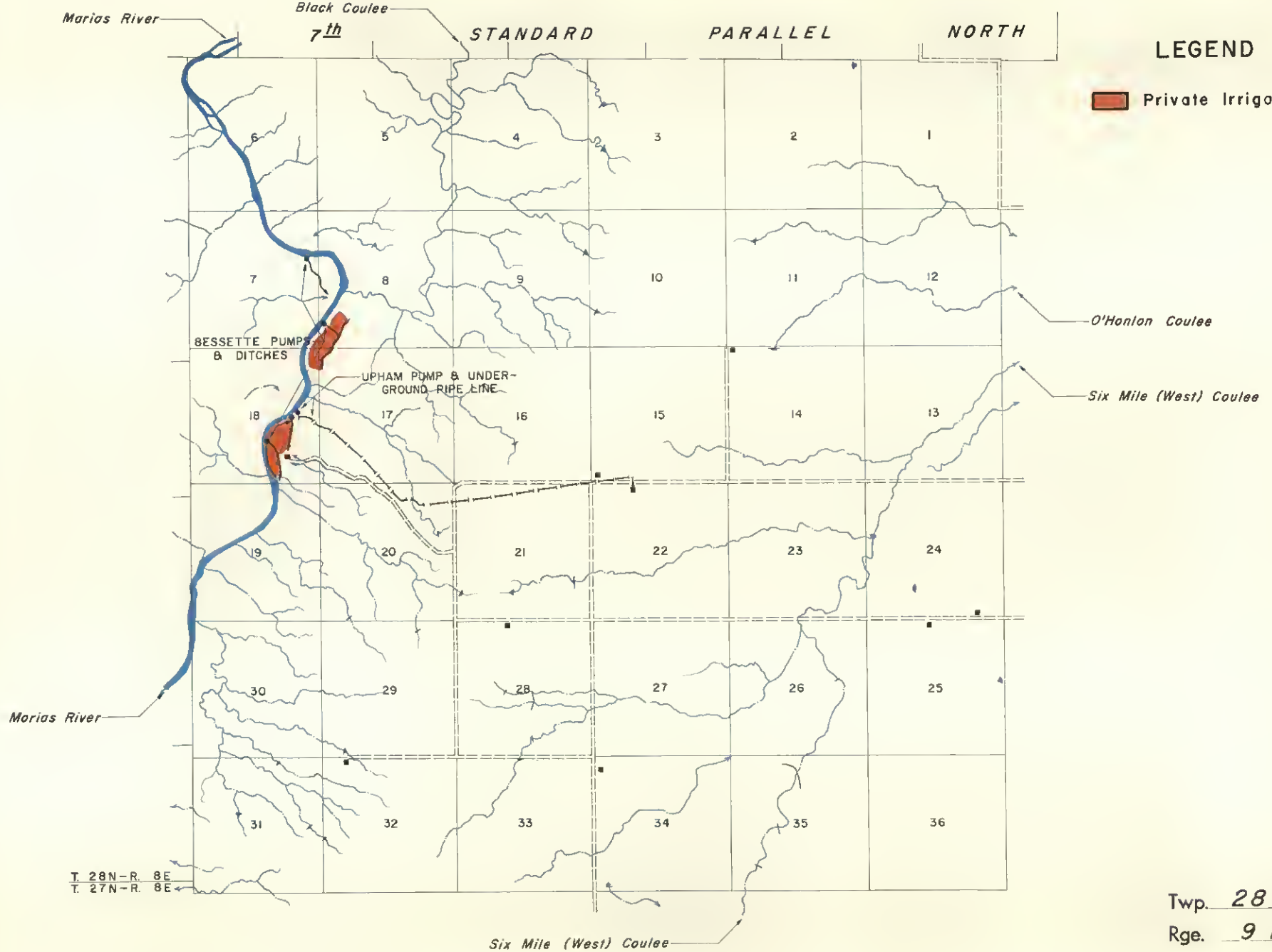


LEGEND

Private Irrigation

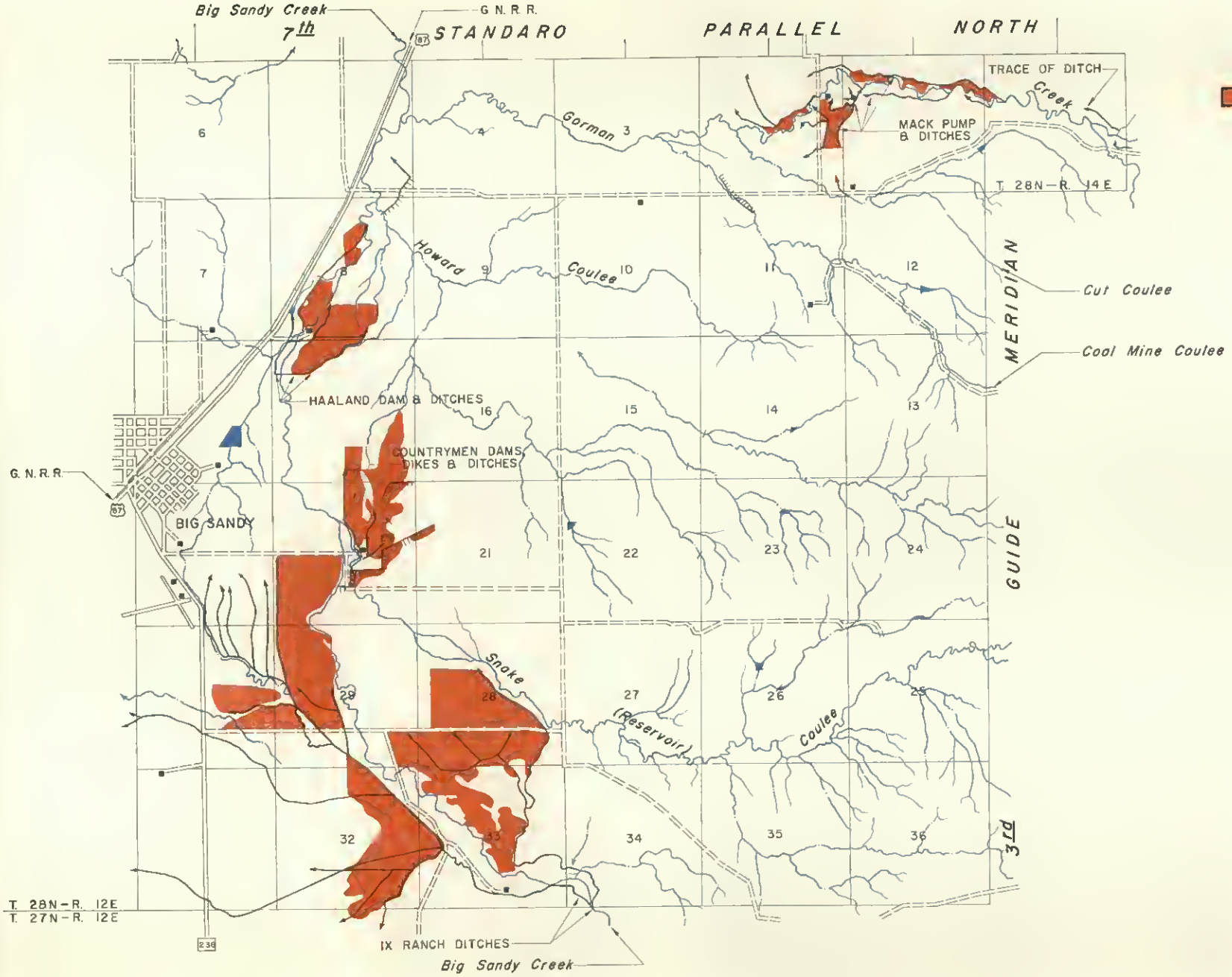
Twp. 27 North

Rge. 17 East



Twp. 28 North

Rge. 9 East

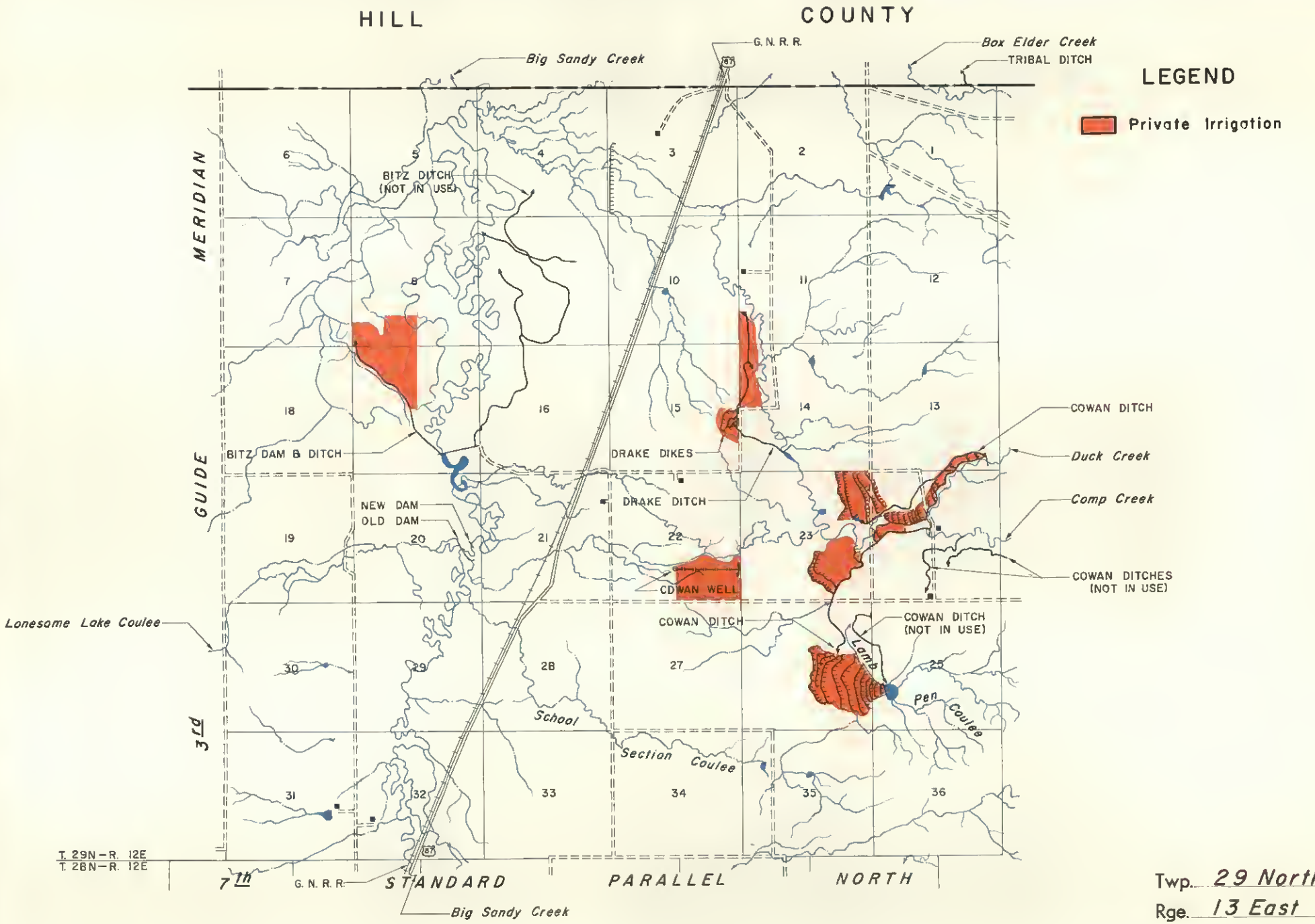


LEGEND

Private Irrigation

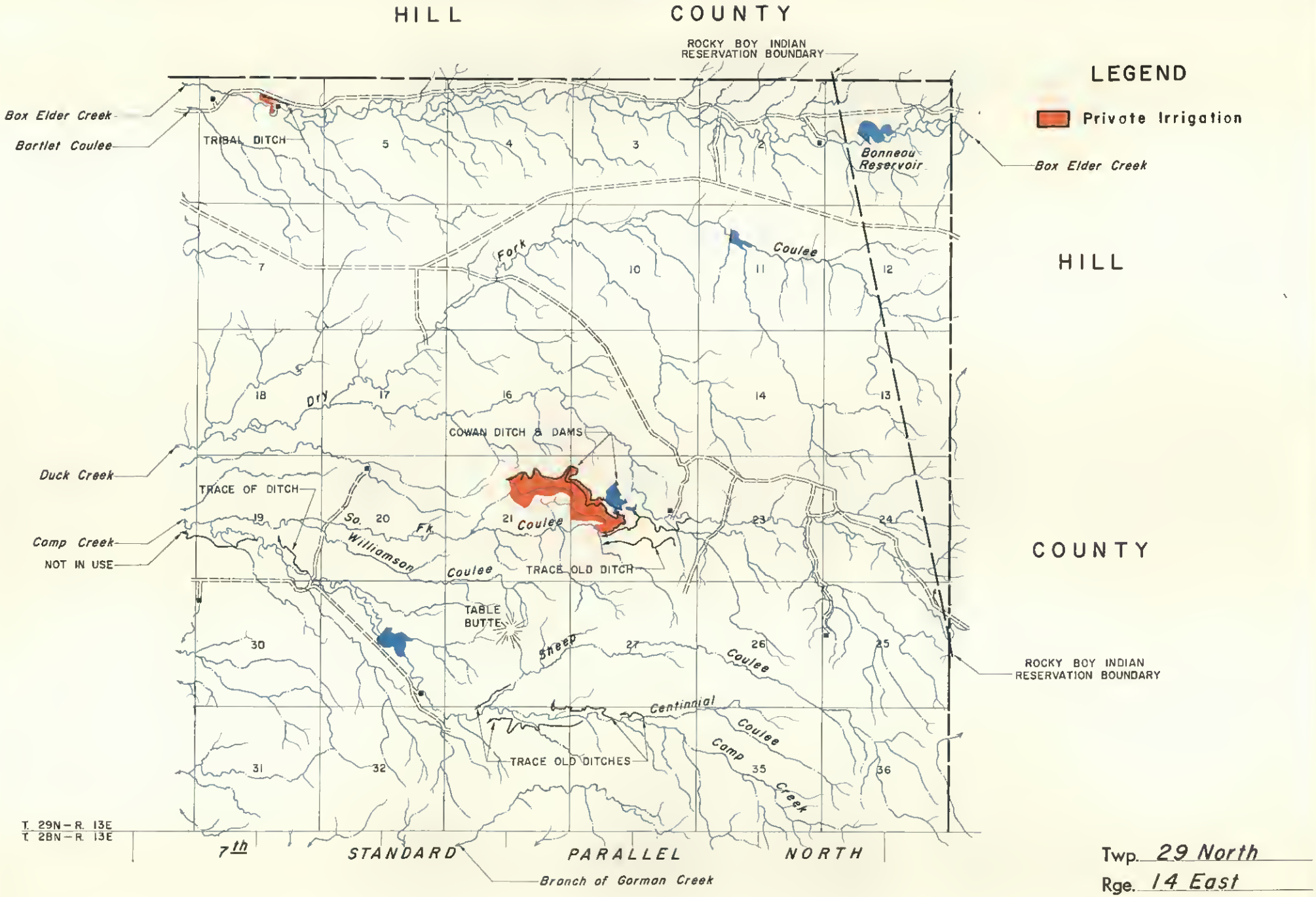
Twp. 28 North

Rge. 13 & 14 East



Twp. 29 North

Rge. 13 East


HILL COUNTY
ROCKY BOY INDIAN RESERVATION BOUNDARY
LEGEND
Private Irrigation
Box Elder Creek
Bartlet Coulee
TRIBAL DITCH
Bonneau Reservoir
Box Elder Creek
Coulee
Fork
HILL
Dry
COWAN DITCH & DAMS
Duck Creek
TRACE OF DITCH
Comp Creek
NOT IN USE
So. Fk.
Williamson
Coulee
TRACE OLD DITCH
COUNTY
TABLE BUTTE
Sheep
Coulee
ROCKY BOY INDIAN RESERVATION BOUNDARY
Centinnial
Coulee
Comp
Creek
TRACE OLD DITCHES
T. 29N – R. 13E
T. 28N – R. 13E
7th STANDARD PARALLEL NORTH
Branch of Gorman Creek
Twp. 29 North
Rge. 14 East